CITY OF NEWTON
PURCHASING DEPARTMENT

PROJECT FOR PUBLIC BUILDINGS DEPARTMENT

PROJECT MANUAL:

EMERGENCY GENERATOR REPLACEMENT
AT PEIRCE ELEMENTARY SCHOOL

INVITATION FOR BID #10-51

(Re-Bid for IFB #09-97)

Prepared by:
Norian/Siani Engineering, Inc.
241 Crescent Street
Waltham, MA 02453

MARCH 2010

Setti D. Warren, Mayor

CITY OF NEWTON, MASSACHUSETTS

PURCHASING DEPARTMENT
purchasing@newtonma.gov
Fax (617) 796-1227

April 13, 2010

ADDENDUM #5

INVITATION FOR BID #10-51

EMERGENCY GENERATOR AT PEIRCE SCHOOL

THIS ADDENDUM IS TO: **Answer the following question:**

Q1. My company is the local distributor of MTU Onsite Energy generator sets (formally know as MTU Detroit Diesel Corp.)Will my product be considered an acceptable manufacturer for this project?

A1. No. The three manufacturers listed in the specification are the only manufacturers that will be considered.

All other terms and conditions of this bid remain unchanged

PLEASE ENSURE THAT YOU ACKNOWLEDGE THIS ADDENDUM ON YOUR BID FORM

Thank you.

Re Cappoli
Chief Procurement Officer

CITY OF NEWTON, MASSACHUSETTS

PURCHASING DEPARTMENT
purchasing@newtonma.gov
Fax (617) 796-1227

April 9, 2010

ADDENDUM #4

INVITATION FOR BID #10-51

EMERGENCY GENERATOR AT PEIRCE SCHOOL

THIS ADDENDUM IS TO: **1. Provide answers from the Pre-Bid Meeting and additional questions**
2. Provide drawing #SE-1 (must be obtained by calling or visiting the Purchasing Dept. 617-796-1220 which is page 3 of 3)

Q1. What is the extent of the asbestos removal?
A1. See Section 13280, Asbestos Abatement, Part 1: General, 1.2 Work Included

Q2. Is there natural gas generator outside of the building?
A2. No

Q3. Where is the main power source?
A3. Boiler Room

Q4. Is there a transfer switch required and where would it go?
A4. Yes

Q5. Would it be possible to lay the conduit on the soft shoulder along the driveway instead of digging up the driveway?
A5. No, the grass side of the fence is not School department property.

Q6. If we need to dig the drive way does the entire driveway need to be re-paved?
A6. Patched and seal coated as per Section 01010

Q7. Table of Contents says there should be drawing numbers M-1, M-2, & SE-1, but there's only an S-1 not SE and there's NO electrical on any of them?
A7. Plan SE-1 is available, for pick-up, in the Purchasing dept.

Q8. The site plans do not show anything for the inside of the building (steam, oil tank, pipes ect.) would it be possible to get those?
A8. Please reference plan M-2 and SE-1.

Q9. Regarding the Emergency Generator Replacement at the Pierce Elem School the specifications indicate that the design is based on Caterpillar with units manufactured by Cummins/Onan, Generac or Kohler to be considered. Will these be the only manufacturers accepted by the City of Newton on this project or would a Baldor also be considered?
A9. Generac was listed in error so this manufacturer will also not be considered. The other three are Caterpillar, Onan or Kohler

Q10. After today's walk-thru, it is not clear on the spec and drawings what the asbestos scope is. Can you clarify?

A10. See #1 above

Q11. How much of the breaching is required to be abated?

A11. All breaching serving the dedicated DHW boiler.

Q12. What pipe cover is to be removed as part of the 100 linear feet?

A12.Covering on all piping associated with the dedicated DHW boiler.

Q13. After the boiler is dismantled, who does the capping of the breeching?

A13. Work related to boiler venting is the responsibility of the plumbing subcontractor.

Q14. Main panel volts, amps, phase circuit info?

A14. Please reference plan SE-1.

Q15. Conduit from generator to transfer switch, size and quantity?

A15. Please reference plan SE-1.

Q16. Conduit in ground schedule 40 in concrete or schedule 80 in sand filled trench?

A16. Please reference plan SE-1.

Q17. Conductors from generator to transfer switch, copper or aluminum?

A17. Please reference plan SE-1.

PLAN #SE-1 can be obtained by calling or visiting the Purchasing Department (617) 796-1220.

All other terms and conditions of this bid remain unchanged

PLEASE ENSURE THAT YOU ACKNOWLEDGE THIS ADDENDUM ON YOUR BID FORM

Thank you.

Re Cappoli
Chief Procurement Officer

CITY OF NEWTON, MASSACHUSETTS

PURCHASING DEPARTMENT
purchasing@newtonma.gov
Fax (617) 796-1227

April 8, 2010

ADDENDUM #3

INVITATION FOR BID #10-51

EMERGENCY GENERATOR AT PEIRCE SCHOOL

THIS ADDENDUM IS TO: **Change the Bid Opening Date to:**

11:30 a.m., Thursday, April 15, 2010

This delay is to allow enough time for us to provide answers and a new drawing regarding this project.

All other terms and conditions of this bid remain unchanged

PLEASE ENSURE THAT YOU ACKNOWLEDGE THIS ADDENDUM ON YOUR BID FORM

Thank you.

Re Cappoli
Chief Procurement Officer

CITY OF NEWTON, MASSACHUSETTS

PURCHASING DEPARTMENT
purchasing@newtonma.gov
Fax (617) 796-1227

April 5, 2010

ADDENDUM #2

INVITATION FOR BID #10-51

EMERGENCY GENERATOR AT PEIRCE SCHOOL

THIS ADDENDUM IS TO: **CHANGE THE BID OPENING TO:**

MONDAY, APRIL 12, 2010 AT 11:00 A.M.

This is to allow additional time to respond to all questions received for this IFB.

All other terms and conditions of this bid remain unchanged

PLEASE ENSURE THAT YOU ACKNOWLEDGE THIS ADDENDUM ON YOUR BID FORM

Thank you.

Re Cappoli
Chief Procurement Officer

CITY OF NEWTON, MASSACHUSETTS

PURCHASING DEPARTMENT
purchasing@newtonma.gov
Fax (617) 796-1227

March 25, 2010

ADDENDUM #1

INVITATION FOR BID #10-51

EMERGENCY GENERATOR AT PIERCE SCHOOL

THIS ADDENDUM IS TO: **1. Provide clarification for Plan #SE-1:**

1. **Detail 2 on Drawing M-2 is neither correct nor to scale. The "Site Electrical Plan" detail on Drawing SE-1 is correct and to the scale shown: 1" = 20'-0". Do not use M-2 estimate lengths or distances; use only SE-1.**

All other terms and conditions of this bid remain unchanged

PLEASE ENSURE THAT YOU ACKNOWLEDGE THIS ADDENDUM ON YOUR BID FORM

Thank you.

Re Cappoli
Chief Procurement Officer

CITY OF NEWTON

PROJECT MANUAL TABLE OF CONTENTS

EMERGENCY GENERATOR REPLACEMENT AT PEIRCE ELEMENTARY SCHOOL

(*Continued on following page*)

PROJECT MANUAL TABLE OF CONTENTS

EMERGENCY GENERATOR REPLACEMENT
AT PEIRCE ELEMENTARY SCHOOL

Part 2 – General Requirements and Project Specifications

PART B – SPECIFICATIONS

END OF SECTION

CITY OF NEWTON
PURCHASING DEPARTMENT
INVITATION FOR BID No. 10-51

The City of Newton invites sealed bids from Contractors for

EMERGENCY GENERATOR REPLACEMENT
AT PEIRCE ELEMENTARY SCHOOL

Pre-bid will be held on site at: **11:00 a.m., April 1, 2010 in Front Lobby at 170 Temple Street, Newton, MA**
Bids will be received until **11:00 a.m., April 8, 2010**
at the Purchasing Department, Room 204, Newton City Hall, 1000 Commonwealth Ave., Newton, MA 02459. Immediately following the deadline for bids all bids received within the time specified will be publicly opened and read aloud.

Work under this contract shall consist of: asbestos abatement, demolition and removal of a boiler, indirect water heater and emergency generator and the installation of a new emergency generator at the Peirce Elementary School. **Work is expected to begin on July 1, 2010 and shall be completed within 53 calendar days, but not later than August 31, 2010.**

Contract Documents will be available **online at the City's website: www.ci.newton.ma.us/bids** or for pickup at the Purchasing Department or after: **10:00 a.m., March 25, 2010.** There will be no charge for contract documents.

All General Bids must be accompanied by a copy of a "Certificate of Eligibility" (DCAM Form CQ-7) issued by the Department of Capital Asset Management and Maintenance (DCAM) and a "Contractor Update Statement" (DCAM Form CQ-3). The category of work for which the Bidder must certified is: **ELECTRICAL**

Award will be made to the bidder with the lowest total contract price, including any accepted alternates, that has been deemed responsible and eligible. **All bids shall be submitted as one ORIGINAL and one COPY.**

All bids must be accompanied by a bid deposit in an amount that is not less than five percent (5%) of the value of the bid, including all add alternates. Bid deposits, payable to the City of Newton, shall be either in the form of a bid bond, or cash, or a certified check, or a treasurer's or cashier's check issued by a responsible bank or trust company.

All bids are subject to the provisions of M.G.L. Chapter 149, Section 44 A-J. **Wages are subject** to minimum wage rates determined by the Massachusetts Department of Labor and Industries pursuant to M.G.L. Chapter 149, Sec. 26 to 27H. The schedule of wage rates applicable to this contract is included in the bidding documents. In addtion, the prevailing wage schedule will be updated annually for all public construction projects lasting longer than one (1) year. You will be required to pay the rates set out in any updated prevailing wage schedule. Increases in prevailing wage schedules will not be the basis for change order requests. The successful bidder will be required to provide a Certificate of Insurance demonstrating current coverage of the type and amounts set forth in the Project Manual**.** The successful bidder will be required to furnish a **Performance and Labor and Materials Payment Bond each in the amount of 100%** of the contract total.

Bidders attention is directed to the requirements of the City of Newton Supplemental Equal Employment Opportunity, Anit-Discriminitation and Affirmative Action Program and also to the Minority/Women Business Enterprise Plan, December 1999, all of which are hereby incorporated into the Contract Documents. In the event of conflict between any of the above listed policies, the stricter policy shall apply.

If you download bids from the internet website (**www.ci.newton.ma.us/bids**) I strongly suggest you email (purchasing@newtonma.gov) your company's NAME, ADDRESS, PHONE, FAX AND INVITATION FOR BID NUMBER, so that we may add you to the Bidders List and you will be notified of any/all addendums. **Plans must be obtained through the Purchasing Department.**

The City of Newton's Purchasing Dept. will convert to an email notification system of all upcoming public bids effective July 1, 2009. If you wish to receive notification of bids, please email us your company information to purchasing@newtonma.gov, otherwise you may view all City of Newton public bids online at **www.ci.newton.ma.us/bids**.

The City of Newton will reject any and all bids when required to do so by the above referenced General Laws. In addition, the City of Newton reserves the right to waive any informalities in any or all bids, or to reject any or all bids, in whole or in part, if it be in the public interest to do so.

CITY OF NEWTON
Re Cappoli
Chief Procurement Office
March 25, 2010

CITY OF NEWTON

DEPARTMENT OF PURCHASING

INSTRUCTIONS TO BIDDERS

ARTICLE 1 – BIDDER'S REPRESENTATION

1.1. Each General Bidder (hereinafter called the "Bidder") by making a bid (hereinafter called "bid") represents that:

1.2. The Bidder has read and understands the Contract Documents and the bid is made in accordance therewith.

1.3. The Bidder has visited the site and is familiar with the local conditions under which the Work has to be performed.

1.4. Failure to so examine the Contract Documents and site will not relieve any Bidder from any obligation under the bid as submitted.

ARTICLE 2 - REQUEST FOR INTERPRETATION

2.1 Bidders shall promptly notify the City of any ambiguity, inconsistency, or error which they may discover upon examination of the Contract Documents, the site, and local conditions.

2.2 Bidders requiring clarification or interpretation of the Contract Documents shall make a written request to the *Chief Procurement Officer*, at purchasing@newtonma.gov or via facsimile (617) 796-1227. The City will answer such requests if received seven (7) calendar days before the date for receipt of the bids.

2.3 Interpretation, correction, or change in the Contract Documents will be made by Addendum which will become part of the Contract Documents. The City will not be held accountable for any oral instruction.

2.4 Addenda will be faxed or mailed First Class postage by the USPS, to every individual or firm on record as having taken a set of Contract Documents.

2.5 Copies of addenda will be made available for inspection at the location listed in the Invitation for Bids where Contract `Documents are on file, in addition to being available online at **www.ci.newton.ma.us/bids**.

2.6 Bidders downloading information off the internet web site are soley responsible for obtaining any addenda prior to the bid opening. If the bidder makes themselves known to the Purchasing Dept., at purchasing@newtonma.gov or via facsimile (617) 796-1227, they shall be placed on the bidder's list. Bidders must provide the Purchasing Dept. with their company's name, street address, city, state, zip, phone, fax and **INVITATION FOR BID NUMBER #10-51**.

ARTICLE 3 – MBE PARTICIPATION

3.1 Notice is hereby given that the Mayor's Affirmative Action Plan for the City of Newton, dated December 1999 is applicable to all construction contracts in excess of $10,000.00. A copy of this plan is on file at City of Newton Purchasing Department.

3.2 Notice is hereby given that the City of Newton Minority/Women Business Enterprise Plan dated December 1999 and the Supplemental Equal Employment Opportunity Anti-Discrimination and Affirmative Action Program is applicable to all City contracts for goods and services in excess of $50,000.00. Copies of these plans are incorporated in the bidding documents.

ARTICLE 4 – PREPARATION AND SUBMISSION OF BIDS

4.1 Bids shall be submitted on the "Bid Form" as appropriate, furnished by the City.

4.2 All entries on the Bid Form shall be made by typewriter or in ink.

4.3 Where so indicated on the Bid Form, sums shall be expressed in both words and figures. Where there is a discrepancy between the bid sum expressed in words and the bid sum expressed in figures, the words shall control.

4.4 Bid Deposits shall be submitted in the amount specified in the Invitation for Bids. They shall be made payable to the City of Newton and shall be either in the form of cash, certified check, treasurer's or cashier's check issued by a responsible bank or trust company, or a bid bond issued by a surety licensed to do business in the Commonwealth of Massachusetts; and shall be conditioned upon the faithful performance by the principal of the agreements contained in the bid.

Bid deposits of the three (3) lowest responsible and eligible Bidders shall be retained until the execution and delivery of the Owner/Contractor agreement.

4.5 The Bid, including the bid deposit shall be enclosed in a sealed envelope with the following plainly marked on the outside:GENERAL BID FOR:

NAME OF PROJECT AND **INVITATION NUMBER**

BIDDER'S NAME, BUSINESS ADDRESS, AND PHONE NUMBER

Date and time for receipt of bids is set forth in the Invitation for Bids.

4.6 Timely delivery of a bid at the location designated shall be the full responsibility of the Bidder.

4.7 Bids shall be submitted with one **original** and one **copy.**

4.8 Be advised that a new Massachusetts law has been enacted that required all employees who work on Massachusetts public works construcion sites must have no less than 10 hours of OSHA-approved safety and health training. See Chapter 306 of the Acts of 2004, which will become effective July 1, 2006.

1. This requirement will apply to any general bid or sub bid submitted on or after July 1, 2006 and to any contract awarded on or after July 1, 2006.
2. This law directs the Massachusetts Attorney General to restrain the award of construction contracts to any contractor who is in violation to this requirement and to restrain the performance of these contracts by non-complying contractors.
3. The contractor and all subcontractors on this project will be required to provide certification of compliance with this requirement. Non-compliance with this new Massachusetts Law will disquality you from bidding on public contracts.

ARTICLE 5 – ALTERNATES

5.1 Each Bidder shall acknowledge Alternates (if any) in Section C on the Bid Form.

5.2 In the event an Alternate does not involve a change in the amount of the base bid, the Bidder shall so indicated by writing "No Change", or "N/C" or "0" in the space provided for that Alternate.

5.3 Bidders shall enter on the Bid Form a single amount for each Alternate which shall consist of the amount for work performed by the Contractor.

5.4 The low Bidder will be determined on the basis of the sum of the base bid and the accepted alternates.

ARTICLE 6 – WITHDRAWAL OF BIDS

6.1 Any bid may be withdrawn prior to the time designated for receipt of bids on written or telegraphic request. Telegraphic withdrawal of bids must be confirmed over the Bidder's signature by written notice postmarked on or before the date and time set for receipt of bids.

6.2 Withdrawn bids may be resubmitted up to the time designated for the receipt of bids.

6.3 No bids shall be withdrawn within thirty days, Saturdays, Sundays and legal holidays excluded, after the opening of the bids.

ARTICLE 7 – CONTRACT AWARD

7.1 The City of Newton will award the contract to the lowest eligible and responsible Bidder within thirty days, Saturdays, Sundays, and legal holidays excluded after the opening of bids.

7.2 The City of Newton reserves the right to waive any informalities in or to reject any or all Bids if it be in the public interest to do so.

7.3 As used herein, the term "lowest responsible and eligible Bidder" shall mean the Bidder (1) whose bid is the lowest of those bidders possessing the skill, ability and integrity necessary for the faithful performance of the work; (2) who shall certify that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (3) who, where the provisions of section eight B of chapter twenty-nine apply, shall have been determined to be qualified thereunder.

7.4 Subsequent to the award and within five (5) days, Saturday, Sundays and legal holidays excluded, after the prescribed forms are presented for signature, the successful Bidder shall execute and deliver to the City a Contract in the form included in the Contract Documents in such number of counterparts as the City may require.

7.5 In the event that the City receives low bids in identical amount from two or more responsive and responsible Bidders, the City shall select the successful Bidder by a blind selection process such as flipping a coin or drawing names from a hat. The low Bidders who are under consideration will be invited to attend and observe the selection process.

ARTICLE 8 – TAXES

8.1 The Bidder shall not include in this bid any tax imposed upon the sale or rental of tangible personal property in this Commonwealth, such as any and all building materials, supplies, services and equipment required to complete the work.

8.2 The City is exempt from payment of the Massachusetts Sales Tax, and the Bidder shall not include any sales tax on its bid. The City's exemption Number is E-046-001-404.

END OF SECTION

CITY OF NEWTON
FOR GENERAL BID #10-51

EMERGENCY GENERATOR REPLACEMENT
AT PEIRCE ELEMENTARY SCHOOL

TO THE AWARDING AUTHORITY:

A. The undersigned proposes to furnish all labor and materials required for generator replacement in Newton, Massachusetts in accordance with the accompanying plans and specifications prepared by the City of Newton for the contract price specified below, subject to additions and deductions according to the terms of the specifications.

B. This bid includes addenda number(s) _____, _____, _____, _____,

C. The proposed contract price is:

_____DOLLARS ($_____)

No Alternates.

COMPANY:_____

The sub-division of the proposed contract price is as follows:

Item 1. The work of the General Contractor, being all work other than that covered by Item 2
Total of Item 1: $ N/A

Item 2. Sub-bids as follows:

Sub-Trade	Name of Sub-bidder	Amount	Bond Required ? (Yes or No)
N/A	N/A	$ N/A	N/A

Total of Item 2: $ N/A

The undersigned agrees that each of the above named sub-bidders will be used for the work indicated at the amount stated, unless a substitution is made. The undersigned further agrees to pay the premiums for the performance and payment bonds furnished by sub-bidders as requested herein and that all of the cost of all such premiums is included in the amount set forth in Item 1 of this bid.

The undersigned agrees that if s/he is selected as general contractor, s/he will promptly confer with the awarding authority on the question of sub-bidders; and that the awarding authority may substitute for any sub-bid listed above a sub-bid filed with the awarding authority by another sub-bidder for the sub-trade against whose standing and ability the undersigned makes no objection; and that the undersigned will use all such finally selected sub-bidders at the amounts named in their respectivesub-bids and be in every way as responsible for them and their work as if they had been originally named in this general bid, the total contract price being adjusted to conform thereto.

E. The undersigned agrees that, if s/he is selected as general contractor, s/he will within five days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the awarding authority, execute a contract in accordance with the terms of this bid and furnish a performance bond and also a labor and materials payment bond, each of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority and each in the sum of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price.

The undersigned hereby certifies that s/he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work and that s/he will comply fully with all laws and regulations applicable to awards made subject to section forty-four A of M.G.L. Chapter 149

The undersigned certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration ("OSHA") that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States OSHA that is at least 10 hours in duration. The undersigned understands that any employee found on a worksite subject to this section without documentation of successful completion of a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration shall be subject to immediate removal.

The undersigned further certifies that s/he intends to comply with the City of Newton Minority/Women Business Enterprise Plan, dated December 19, 1999 to further expand business opportunities for minority firms.

The undersigned further certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

Date :_____

_____
(Name of General Bidder)

BY:_____
(Signature)

_____
(Printed Name and Title of Signatory)

_____
(Business Address)

_____
(City, State Zip)

_____/_____
(Telephone) (FAX)

_____
E-mail address (optional)

NOTE: If the bidder is a corporation, indicate state of incorporation under signature, and affix corporate seal; if a partnership, give full names and residential addresses of all partners; and if an individual, give residential address if different from business address.

END OF SECTION

CONTRACT FORMS

The forms are provided for informational purposes only.

The awarded bidder will be required to complete and submit the following documents in order to execute a contract pursuant to this bid.

None of the following forms are required at the time of bid submittal.

OWNER-CONTRACTOR CONTRACT

CONTRACT NO. C ____

THIS AGREEMENT made this ___ day of _____ in the year Two Thousand and Ten by and between the CITY OF NEWTON, a municipal corporation organized and existing under the laws of the Commonwealth of Massachusetts, hereinafter referred to as the CITY, acting through its Chief Procurement Officer, but without personal liability to him, and

hereinafter referred to as the CONTRACTOR.

The parties hereto for the consideration hereinafter set forth agree as follows:

ARTICLE 1. **STATEMENT OF WORK.** The Contractor shall furnish all labor, materials, equipment and insurance, and perform all work required in strict accordance with the Project Manual entitled:

Emergency Generator Replacement
At the Peirce Elementary School

hereinafter referred to as the SPECIFICATIONS and the Drawings referred to therein.

The said Specifications, Addenda and Drawings are incorporated herein by reference and are made a part hereof.

ARTICLE 2. **TIME OF COMPLETION.** It is anticipated that Contractor shall begin work on July 1, 2010 and all work shall be complete within 53 calendar days, but no later than August 31, 2010.

ARTICLE 3. **THE CONTRACT PRICE.** The City shall pay the Contractor pursuant to and in accordance with the provisions set forth in the Contract Documents, subject to additions and deductions in accordance with the terms of the Specifications, for the full and satisfactory performance of the Contract the sum of:

ARTICLE 4. **CONTRACT DOCUMENTS.** The Contract shall consist of the following component parts, copies of which are attached hereto:

a. This CITY-CONTRACTOR Agreement;

b. The City's Invitation For Bid #10-51 issued by the Purchasing Department;

c. The Project Manual for Emergency Generator Replacement at the Peirce Elementary School including the Instructions to Bidders; General Conditions; Special Conditions; MWBE/AA Requirements, Wage Rate Requirements and Wage Rate Schedule(s) including any updated prevailing wage rate schedules if applicable; The Supplementary Special Conditions; General Requirements and Project Specifications; and Drawings, if included or referenced therein;

d. Addenda Number(s) ____N/A____;

e. The Bid Response of the CONTRACTOR submitted for this Project and accompanying documents and certifications;

f. Certificate(s) of Insurance and surety bond(s) submitted by the CONTRACTOR in connection with this Project;

g. Duly authorized and executed Amendments, Change Orders or Work Orders issued by the CITY after execution of this CITY-CONTRACTOR Agreement

This Contract Form, together with the other documents enumerated in this Article 4 form the Contract.

ARTICLE 5. **ALTERNATES.** The following Alternates have been accepted and their costs are included in the Contract Price stated in Article 3 of this Agreement:

Alternates: N/A.

ARTICLE 6. **APPLICABLE STATUTES.** All applicable federal, state and local laws and regulations are incorporated herein by reference and the Contractor agrees to comply with same.

IN WITNESS WHEREOF, the parties have caused this instrument to be executed under seal the day and year first above written.

CONTRACTOR

By _____
Title _____

Date _____

Affix Corporate Seal Here

City funds in the amount of $_____
are available in account number
31C115F4B-5825

I further certify that the Mayor is
authorized to execute contracts and
approve change orders

By _____
Comptroller of Accounts

Date _____

CITY OF NEWTON

By _____
Chief Procurement Officer

Date _____

By _____
Commissioner of Public Buildings

Date _____

Approved as to Legal Form and
Character

By _____
Associate City Solicitor

Date _____

CONTRACT AND BONDS APPROVED

By _____
Setti D. Warren, *Mayor*

Date _____

CERTIFICATE OF AUTHORITY – CORPORATE

1. I hereby certify that I am the Clerk/Secretary of _____
(insert full name of Corporation)
2. corporation, and that _____
(insert the name of officer who signed the **contract and bonds**.)
3. is the duly elected_____
(insert the title of the officer in line 2)
4. of said corporation, and that on _____
(insert a date that is ***ON OR BEFORE*** the date the officer signed the **contract and bonds**.)

at a duly authorized meeting of the Board of Directors of said corporation, at which all the directors were present or waived notice, it was voted that

5. _____ the _____
(insert **name** from line 2) (insert **title** from line 3)

of this corporation be and hereby is authorized to execute contracts and bonds in the name and on behalf of said corporation, and affix its Corporate Seal thereto, and such execution of any contract of obligation in this corporation's name and on its behalf, with or without the Corporate Seal, shall be valid and binding upon this corporation; and that the above vote has not been amended or rescinded and remains in full force and effect as of the date set forth below.

6. ATTEST: _____
(Signature of **Clerk or Secretary**)* *AFFIX CORPORATE SEAL HERE*
7. Name: _____
(Please print or type name in line 6)*
8. Date: _____
(insert a date that is ***ON OR AFTER*** the date the officer signed the **contract and bonds**.)

*The name and signature inserted in lines 6 & 7 **must** be that of the **Clerk or Secretary** of the corporation.

ATTESTATION

Pursuant to MG c. 62C, § 49A, the undersigned acting on behalf of the Contractor, certifies under the penalties of perjury that, to the best of the undersign's knowledge and belief, the Contractor is in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.*

_____ _____

**Signature of Individual or Corporate Contractor (Mandatory)

*** Contractor's Social Security Number (Voluntary) or Federal Identification Number

By: _____ Date: _____

Corporate Officer
(Mandatory, if applicable)

* The provision in the Attestation relating to child support applies only when the Contractor is an individual.

** Approval of a contract or other agreement will not be granted unless the applicant signs this certification clause.

*** Your social security number will be furnished to the Massachusetts Department of Revenue to determine whether you have met tax filing or tax payment obligations. Providers who fail to correct their non-filing or delinquency will not have a contract or other agreement issued, renewed, or extended. This request is made under the authority of GL c. 62C, § 49A.

CITY OF NEWTON, MASSACHUSETTS

PERFORMANCE BOND

Know All Men By These Presents:

That we, _____, as PRINCIPAL, and _____, as SURETY, are held and firmly bound unto the City of Newton as Obligee, in the sum of dollars **($_____)** to be paid to the Obligee, for which payments well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Whereas, the said PRINCIPAL has made a contract with the Obligee, bearing the date of _____, 2010 for the construction of _____ in Newton, Massachusetts.

(Project Title)

Now, the condition of this obligation is such that if the PRINCIPAL and all Sub-contractors under said contract shall well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of said contract on its part to be kept and performed during the original term of said contract and any extensions thereof that may be granted by the Obligee, with or without notice to the SURETY, and during the life and any guarantee required under the contract, and shall also well and truly keep and perform all the undertakings, covenants, agreements, terms and conditions of any and all duly authorized modifications, alterations, changes or additions to said contract that may hereafter be made, notice to the SURETY of such modifications, alterations, changes or additions being hereby waived, then this obligation shall become null and void; otherwise, it shall remain in full force, virtue and effect.

In the event, that the contract is abandoned by the PRINCIPAL, or in the event that the Obligee terminates the employment of the PRINCIPAL or the authority of the PRINCIPAL to continue the work said SURETY hereby further agrees that said SURETY shall, if requested in writing by the Obligee, take such action as is necessary to complete said contract.

In Witness Whereof, the PRINCIPAL and SURETY have hereto set their hands and seals this ___day of _____ 2010.

PRINCIPAL	SURETY
_____	_____
BY_____	BY _____
(SEAL)	(ATTORNEY-IN-FACT) (SEAL)
_____ (Title)	
ATTEST: _____	ATTEST: _____

CITY OF NEWTON, MASSACHUSETTS

PAYMENT BOND

Know All Men By These Presents:

That we, _____, as PRINCIPAL, and _____, as SURETY, are held and firmly bound unto the City of Newton as Obligee, in the sum of dollars **($_____)** to be paid to the Obligee, for which payments well and truly to be made, we bind ourselves, our respective heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

Whereas, the said PRINCIPAL has made a contract with the Obligee, bearing the date of _____, 2010, for the construction of _____ in Newton, Massachusetts.

(Project Title)

Now, the conditions of this obligation are such that if the PRINCIPAL and all Sub-contractors under said contract shall pay for all labor performed or furnished and for all materials used or employed in said contract and in any and all duly authorized modifications, alterations, extensions of time, changes or additions to said contract that may hereafter be made, notice to the SURETY of such modifications, alterations, extensions of time, changes or additions being hereby waived, the foregoing to include any other purposes or items set out in, and to be subject to, provisions of M.G.L. c. 30, sec. 39A, and M.G.L. c. 149 sec. 29, as amended, then this obligation shall become null and void; otherwise it shall remain in full force, virtue and effect.

In Witness Whereof, the PRINCIPAL and SURETY have hereto set their hands and seals this ___day of_____2010.

PRINCIPAL	SURETY
_____	_____
BY_____	BY _____
(SEAL)	(ATTORNEY-IN-FACT) (SEAL)
_____ (Title)	
ATTEST: _____	ATTEST: _____

Attachment B

CITY OF NEWTON

Contractors Certification

A Contractor will not be eligible for award of a contract, unless such contractor has submitted the following certification, which is deemed a part of the resulting contract.

CONTRACTOR'S CERTIFICATION

_____ Certifies that:
Contractor's Name

it tends to use the following listed construction trades in the work under the contract

_____ and

2. will comply with the minority manpower ration and specific affirmative action steps contained herein; and

3. will obtain from each of its subcontractors and submit to the contracting or administering agency prior to the award of any subcontract under this contract the subcontractor certification required by these bid conditions

_____
(Signature of authorized representative of Contractor)

Any contract for the provision of goods or services to the City of Newton or any of its departments is subject to the ordinance creating the Human Rights Commission, as it may be amended from Time to Time. Any complaints within the purview shall be forwarded immediately to the contracting agency, and a copy shall be sent to the Human Rights Commission; any complaints received by the contracting agency shall be forwarded to the contractor, and a copy shall be sent to the Human Rights Commission.

Attachment C

CITY OF NEWTON

Subcontractors Certification

Prior to the award of any subcontract , regardless of tier, the prospective subcontractor must execute and submit to the Prime Contractor the following certification, which will be deemed a part of the resulting subcontractor.

SUBCONTRACTOR`S CERTIFICATION

_____Certifies that:
Contractor's Name

it tends to use the following listed construction trades in the work under the contract

_____ and

will comply with the minority manpower ration and specific affirmative action steps contained herein; and

will obtain from each of its subcontractors and submit to the contracting or administering agency prior to the award of any subcontract under this contract the subcontractor certification required by these bid conditions

Pursuant to M.G.L. Ch. 62C, Sec. 49A, I certify under the penalties of perjury that, to the best of my knowledge and belief, I am in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

_____
(Signature of authorized representative of Contractor)

In order to ensure that the said subcontractor's certification becomes part of all subcontracts under the prime contract, no subcontract shall be executed until an authorizee representative of the Administrative Agency administering this project has determined in writing, that the said certification has been incorporated in such subcontract, regardless of tier, Any subcontract executed without such written approval shall be void.

Any contract for the provision of goods or services to the City of Newton or any of its departments is subject to the ordinance creating the Human Rights Commission, as it may be amended from Time to Time. Any complaints within the purview shall be forwarded immediately to the contracting agency, and a copy shall be sent to the Human Rights Commission; any complaints received by the contracting agency shall be forwarded to the contractor, and a copy shall be sent to the Human Rights Commission.

END OF SECTION

GENERAL CONDITIONS
OF THE CONTRACT
FOR NON-TECHNICAL SERVICES

The City of Newton, herein referred to as the City, does hereby establish the following General Conditions, applicable to this Invitation for Bids and any subsequent purchase order, work order, or contract resulting therefrom.

1.0 SCOPE OF SERVICES

1.1 The Contractor agrees to furnish all labor, materials, equipment and insurance necessary to perform and fully complete, in every respect, within the time frame herein specified, all work (hereinafter referred as the Services) described in the Project Manual.

1.2 The Contractor shall not make any changes in the scope of Services without the prior written consent of the City. The Contractor shall make reasonable revisions or corrections, within the scope of Services, to any work performed until submitted in a form acceptable to the City.

1.3 The City reserves the right to alter, add to or reduce the Services by delivering to the Contractor written notice specifying the nature and extent of such alteration, addition or reduction. Such notice shall be effective upon the later of actual receipt by the Contractor or upon the date given in such notice. No addition to the Services shall be made unless the City and the Contractor have agreed to such increase in writing.

2.0 CONTRACT TERM

2.1 The obligations of the Contractor identified herein shall commence upon execution of the City-Contractor Contract and shall continue in full force and effect for the duration of the contract term as identified in the Project Manual. The contractor shall commence the performance of services under this contract promptly upon receipt of the City's Notice to Proceed in accordance with the provisions identified in the Project Manual.

2.2 In the event the term of this contract exceeds a period of one year and notwithstanding any provision to the contrary herein, the City shall cancel this contract in the event that funds are not appropriated or otherwise made available to support continuation of performance by the Contractor in any fiscal year succeeding the first year.

3.0 EXECUTION

3.1 All work required hereunder shall be performed as promptly as possible, and in any event within the time herein set forth, and such work shall be subject to approval and acceptance by the City, but such approval and acceptance shall not relieve the Contractor from the obligation to correct any incomplete, inaccurate or defective work, all of which shall be promptly remedied by the Contractor on demand, without cost to the City. The Contractor shall obtain all the required licenses and permits for the work herein described.

3.2 The Contractor shall conform to all determinations and directions of the City concerning the Contractor's delivery of services in the event of inclement weather, equipment failure, picket lines on City property, or labor strikes by the contractor's employees.

4.0 COMPENSATION

4.1 The City shall pay the Contractor for services rendered under this contract in accordance with the amount(s) set forth in the Contractor's General Bid Form and pursuant to the provisions contained in the Project Manual.

4.2 Notwithstanding anything to the contrary contained in the Contract, the City may withhold any payment to the Contractor hereunder if and for so long as the Contractor fails to perform any of its obligations hereunder or otherwise is in default under this Contract including, without limitation, any failure to perform Services in full accordance with the amount sufficient in the reasonable opinion of the City to cure any such default or failure of performance by the Contractor.

4.3 In no event shall the City be required to pay any amounts for work deemed by it to be unacceptable, or which are otherwise disputed. In the event the City disputes any such amounts invoiced, it shall pay all amounts not in dispute and notify the Contractor in writing of the amounts disputed and the reasons therefor.

4.4 No payment made shall constitute or be construed as final acceptance or approval of that part of the Services to which payment relates, or relieve the Contractor of any of its obligations outlined in this Contract. Further, the City shall not be

deemed, by virtue of making payments to the Contractor hereunder, to have released the Contractor from any claim or liability, or to have waived any action arising out of the breach of this Contract by the Contractor.

5.0 REPORTS AND DRAWINGS

When the Contractor has been paid for the Services performed by him or her, all reports, drawings, and other material furnished to the City shall become the City's property and may be used by the City (or such parties as the City may designate) thereafter in such manner and for such proposes as the City (or such parties as the City may designate) may deem advisable, without further employment of or additional compensation to the Contractor. The Contractor shall not release or disclose any report, drawing, or other material furnished to the Contractor by the City in connection with the performance of the Contractor's Services

6.0 CONTRACTOR'S ACCOUNTING RECORDS

The Contractor shall keep records pertaining to Services performed (including complete and detailed time records) on the basis of recognized bookkeeping practices, generally accepted accounting principles, and in accordance with such reasonable requirements to facilitate audit as the City may provide. All records shall be available to the City or its authorized representatives for review and audit during normal business hours.

7.0 ASSIGNMENT/SUBCONTRACTING

The Contractor agrees that he will not sell, assign or transfer this Contract or any part thereof or interest therein without the prior written consent of the City.

8.0 REMEDY FOR DEFAULT

If the Contractor, in the sole judgment of the City, shall violate or fail properly to comply with or perform in any material respect any condition, provision, or warranty hereof, the City shall have the right by prior written notice to the Contractor to have the services called for hereby otherwise performed, and/or to terminate this contract without prejudice to any other rights or remedies of the City under this contract. The Contractor shall pay any excess in the City's cost to so procure the services and any related goods, supplies, materials or equipment. In addition, and without limiting any other remedies available to the City, the Contractor shall be liable for all losses, costs and expenses incurred by the City which result from the Contractors noncompliance.

9.0 SUSPENSION OR TERMINATION

9.1 The City shall have the right, upon seven (7) days written notice to the Contractor so stating, to terminate, suspend, or postpone this contract in whole or in part for any reason deemed by the City to be in the public interest. Any such termination, suspension, or postponement shall not give rise to any cause of action for damages against the City. In the event that the City postpones or suspends the Services, the Contractor's time for performance of the Services shall be extended for a period equal to the period of such postponement or suspension. In the event of termination, suspension or postponement, the City shall pay: (a) for services and any related goods, supplies, materials and equipment furnished up to the time of termination, suspension, or postponement at the contract price upon delivery; (b) for work in process in the amount of the Contractor's cost, determined in accordance with ordinary accepted accounting practices, up to the time of termination, suspension, or postponement; and (c) for raw materials purchased by the Contractor as of the date of termination, suspension, or postponement and which are noncancelable at the Contractor's actual cost plus reasonable handling charges, but only to the extent that such raw materials were purchased in reliance upon this contract and are useful solely with respect to this contract.

9.2 Upon receipt of a notice of termination, suspension, or postponement the Contractor shall immediately cease all work hereunder and cancel all orders placed with respect to this contract. The Contractor's failure to so cancel shall relieve the City of the obligations of paragraph 10.1 above.

9.3 The City may postpone, suspend or terminate the Services immediately, by notice, hand delivery or certified mail, if the Contractor violates any of the provisions of this Contract, or fails to perform or observe any of the terms, covenants or conditions of this Contract, or abandons in whole or in part its Services, or becomes unable to perform its Services.

9.4 In the event of termination of this Contract, the Contractor shall promptly deliver to the City all documents, work papers, calculations, computer programs, data, drawings, plans, and other tangible work product, or materials pertaining to the Services performed under this Contract to the time of termination.

10.0 NOTICE

Any action, notice or request required to be taken, given or made by City or the Contractor hereunder may be taken, given or made only by those persons identified for that purpose on the Contract Form. All notices required to be given hereunder shall be deemed properly given if personally delivered, or if mailed by registered or certified mail, postage prepaid addressed to the address and officer identified on the Contract Form.

11.0 PROTECTION OF PROPERTY

The Contractor shall take all reasonable precautions to prevent damage to property, visible and concealed, and shall restore to substantially the same condition existing prior to the Contractor's entry any disturbance or damage to property caused by the Contractor or any person acting under its control.

12.0 INSURANCE REQUIREMENTS

12.1 The Contractor shall provide insurance coverage as listed below. This insurance shall be provided at the Contractor's expense and shall be in full force and effect during the full term of this Contract.

WORKER'S COMPENSATION	
Worker's Compensation:	Per M.G.L. c.. l49, s. 34 and c.. l52 as amended.
GENERAL LIABILITY	
Personal Injury	$1,000,000 each occurrence
	$3,000,000 aggregate
Property Damage	$1,000,000 each occurrence
	$3,000,000 aggregate
VEHICLE LIABILITY	
Personal Injury	$1,000,000 each person
	$1,000,000 aggregate
Property Damage	$1,000,000

12.2 **The City shall be named as additional insureds on the Contractor's Liability Policies.**

12.3 The Contractor shall not commence the work until proof of compliance with this Section 13.0 has been furnished to the City by submitting one copy of a properly endorsed insurance certificate issued by a company authorized to write insurance in the Commonwealth. This certificate shall indicate that the contractual liability coverage is in force.

12.4 The Contractor shall file the original and one certified copy of all policies with the City within fifteen (15) days after contract award. If the City is damaged by the Contractor's failure to maintain such insurance and to so notify the City, then the Contractor shall be responsible for all reasonable costs attributable thereto.

12.5 Cancellation of any insurance required by this contract, whether by the insurer or the insured, shall not be valid unless written notice thereof is given by the party proposing cancellation to the other party and City at least thirty days prior to the effective date thereof, which shall be expressed in said notice.

13.0 CONFLICT OF INTEREST

No member, agent or employee of the City shall , during his/her tenure or one year thereafter directly or indirectly, have any interest in any property to be included in, or any contract for property, materials or services to be furnished or used in connection with, this contract or the proceeds thereof.

14.0 COMPLIANCE WITH LAWS

All work to be performed and wages paid under this specification shall be in accordance with all applicable laws, state or federal, and all applicable ordinances, codes, rules, and regulations of the City of Newton, or any public board or office having any jurisdiction, regulation or control over any work to be done hereunder, including minimum wage rates. In particular, without limitation, the Contractor agrees to comply with all regulations pertaining to approvals for federal and state grants, and with all federal and state environmental laws and regulations. The Contractor agrees to assist in making any submissions to federal or state agencies as may be required in order to meet the requirements in this paragraph.

15.0 INDEMNIFICATION

The Contractor agrees to indemnify and save the City harmless from and against any and all costs, losses, expenses, liabilities, damages or claims for damages, including reasonable attorney's fees and expenses, on account of any injury or damage to buildings, improvements, or property of the City or on account of any injury (including death) or damage to any person, persons, firm, corporation or association, or on account of any infringement or claim of infringement of patents, arising out of or resulting from the deliveries provided for or performed under this contract or from any act, omission or negligence of the contractor, his agents, employees, or assigns. The foregoing provisions shall not be deemed to be released, waived or modified in any respect by reason of any surety or insurance provided by the contractor under contract.

16.0 FORCE MAJEURE

The City may not hold the Contractor liable for any loss, expense or damage incurred by the City on account of failure of the Contractor to deliver services as specified herein, if that failure is caused by state of war, acts of enemies, expropriation or confiscation of facilities used by the Contractor, or compliance with any law, order, or regulation of any federal, state or municipal governmental authority, if the Contractor shall show that such compliance would impair this ability to perform a material provision of this contract, the Contractor having given the City reasonable notice of such cause.

17.0 DISPUTES

All claims, disputes and other matters in question between the City and the Contractor arising out of or relating to this Contract or the breach of it, shall be submitted for resolution to a court of competent jurisdiction in Massachusetts, unless otherwise agreed by the parties. No such action shall be brought, however, until the completion of all Services under this Contract or the earlier termination of this Contract as provided herein, the parties agreeing to negotiate any claims, disputes or other matters in question during the term of this Contract before resorting to litigation. As to all acts or failures to act by either party to this Contract, any applicable statute of limitations shall commence to run and any alleged cause of action shall be deemed to have accrued in any and all events when the other party becomes aware or should have been aware of such acts or failure to act.

18.0 GOVERNING LAW

This contract shall be governed by and construed in accordance with Massachusetts Law.

19.0 LIABILITY

The Contractor is retained solely for the purpose of and to the extent set forth in this Contract. The Contractor's relationship to the City for the purpose of services to be performed under this Contract shall be that of an independent contractor. The Contractor shall have no capacity or authority to involve the City in any contract or to incur any liability on behalf of the City. In no event shall the City be held liable as an employer or otherwise for any personal injury to or death of the Contractor's principals, employees, agents and/or representatives occasioned by or resulting from the Contractor's performance under this Contract.

20.0 LIENS

The Contractor shall cause to be removed from the property of the City any liens or other claims asserted by any person or entity claiming through or under the Contractor and arising out of Services performed under this Contract by such third party.

21.0 SEVERABILITY

In the event that any portion of this Contract is held illegal or unenforceable by a court of competent jurisdiction, the parties agree that such invalidity shall not affect the validity of the remaining portions of this Contract and Contractor and the City agree to substitute for the invalid provision a valid provision which most closely approximates the economics and intent of the invalid provision.

END OF SECTION

PUBLIC BUILDING MAINTENANCE CONTRACT
SUPPLEMENTAL CONDITIONS
COMMONWEALTH OF MASSACHUSETTS & CITY OF NEWTON

SPECIAL CONDITIONS - COMMONWEALTH OF MASSACHUSETTS

Article 1. METHOD OF PAYING SUBCONTRACTORS

(General Laws, Chapter 30, Section 39F as most recently amended by Chapter 450, §76 of the Acts of 1996)

(1.) Every contract awarded pursuant to section forty-four A to L, inclusive, of chapter one hundred and forty-nine shall contain the following subparagraphs (a) through (i) and every contract awarded pursuant to section thirty-nine M of chapter thirty shall contain the following subparagraphs (a) through (h) and in each case those subparagraphs shall be binding between the general contractor and each subcontractor.

(a) Forthwith after the general contractor receives payment on account of a periodic estimate, the general contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by the subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(b) Not later than the sixty-fifth day after each subcontractor substantially completes his work in accordance with the plans and specifications, the entire balance due under the subcontract less amounts retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the awarding authority shall pay that amount to the general contractor. The general contractor shall forthwith pay to the subcontractor the full amount received from the awarding authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the general contractor.

(c) Each payment made by the awarding authority to the general contractor pursuant to subparagraphs (a) and (b) of this paragraph for the labor performed and the materials furnished by a subcontractor shall be made to the general contractor for the account of that subcontractor, and the awarding authority shall take reasonable steps to compel the general contractor to make each such payment to each such subcontractor. If the awarding authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the general contractor or which is to be included in a payment to the general contractor for payment to the subcontractor as provided in subparagraphs (a) and (b), the awarding authority shall act upon the demand as provided in this section.

(d) If, within seventy days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the general contractor the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount retained by the awarding authority as the estimated cost of completing the incomplete and unsatisfactory items of work, the subcontractor may demand direct payment of the balance from the awarding authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the awarding authority, and a copy shall be delivered to or sent by certified mail to the general contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract and also a statement of the status of completion of the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within ten days after the subcontractor has delivered or so mailed the demand to the awarding authority and delivered or so mailed a copy to the general contractor, the general contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the awarding authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain a detailed breakdown of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor and of the amount due for each claim made by the general contractor against the subcontractor.

(e) Within fifteen days after receipt of the demand by the awarding authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the awarding authority shall make direct payment to the subcontractor of the balance due under the subcontract including any amount due for extra labor and materials furnished to the general contractor, less any amount (i) retained by the awarding authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (ii) specified in any court proceedings barring such payment, or (iii) disputed by the general contractor in the sworn reply; provided, that the awarding authority shall not deduct form a direct payment any amount as provided in part (iii) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph (d). The awarding authority shall make further direct payments to the subcontractor forthwith after the removal of the basis for deductions from direct payments made as provided in parts (i) and (ii) of this subparagraph.

(f) The awarding authority shall forthwith deposit the amount deducted from a direct payment as provided in part (iii) of subparagraph (e) in an interest-bearing joint account in the names of the general contractor and the subcontractor in a bank in Massachusetts selected by the awarding authority or agreed upon by the general contractor and the subcontractor and shall notify the general contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the

amount in the account, including accrued interest, as provided in an agreement between the general contractor and the subcontractor or as determined by a decree of a court of competent jurisdiction.

(g) All direct payments and all deductions from demands for direct payments deposited in an interest-bearing account for accounts in a bank pursuant to subparagraph (f) shall be made out of amounts payable to the general contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later become payable to the general contractor and in the order of receipt of such demands from subcontractors. All direct payments shall discharge the obligation of the awarding authority to the general contractor to the extent of the such payment.

(h) The awarding authority shall deduct from payments to a general contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph (f), are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall have a right in such deductions prior to any claims against such amounts by creditors of the general contractor.

(i) If the subcontractor does not receive payment as provided in subparagraph (a) or if the general contractor does not submit a periodic estimate for the value of the labor or materials performed or furnished by the subcontractor and the subcontractor does not receive payment for same when due less the deductions provided for in subparagraph (a), the subcontractor may demand direct payment by following the procedure in subparagraph (d) and the general contractor may file a sworn reply as provided in that same subparagraph. A demand made after the first day of the month following that for which the subcontractor performed or furnished the labor and materials for which the subcontractor seeks payment shall be valid even if delivered or mailed prior to the time payment was due on a periodic estimate from the general contractor. Thereafter the awarding authority shall proceed as provided in subparagraph (e), (f), (g) and (h).

Article 2. METHOD OF PAYING GENERAL CONTRACTORS

(General Laws, Chapter 30, Section 39K as most recently amended by Chapter 145 of the Acts of 1991 and Chapter 151 of the Acts of 1993.)

Every contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building by the commonwealth, or by any county, city, town, district, board, commission or other public body, when the amount is more than five thousand dollars in the case of the commonwealth and more than two thousand dollars in the case of any county, city, town, district, board, commission or other public body, shall contain the following paragraph: -Within fifteen days (forty-five days in the case of the commonwealth, including local housing authorities) after receipt from the contractor, at the place designated by the awarding authority if such a place is so designated, of a periodic estimate requesting payment of the amount due for the preceding month, the awarding authority will make a periodic payment to the contractor for the work performed during the preceding month and for the materials not incorporated in the work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the contractor has title or to which a subcontractor has title and has authorized the contractor to transfer title to the awarding authority, less (1) a retention based on its estimate of the fair value of its claims against the contractor and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, and less (3) a retention not exceeding five per cent of the approved amount of the periodic payment. After the receipt of a periodic estimate requesting final payment and within sixty-five days after (a) the contractor fully completes the work or substantially completes the work so that the value of the work remaining to be done is, in the estimate of the awarding authority, less than one per cent of the original contract price, or (b) the contractor substantially completes the work and the awarding authority takes possession for occupancy, whichever occurs first, the awarding authority shall pay the contractor the entire balance due on the contract less (1) a retention based on its estimate of the fair value of its claims against the contractor and of the cost of completing the incomplete and unsatisfactory items of work and less (2) a retention for direct payments to subcontractors based on demands for same in accordance with the provisions of section thirty-nine F, or based on the record of payments by the contractor to the subcontractors under this contract if such record of payment indicates that the contractor has not paid subcontractors as provided in section thirty-nine F. If the awarding authority fails to make payment as herein provided, there shall be added to each such payment daily interest at the rate of three percentage points above the rediscount rate then charged by the Federal Reserve Bank of Boston commencing on the first day after said payment is due and continuing until the payment is delivered or mailed to the contractor; provided, that no interest shall be due, in any event, on the amount due on a periodic estimate for final payment until fifteen days (twenty-four days in the case of the commonwealth) after receipt of such a periodic estimate from the contractor, at the place designated by the awarding authority if such a place is so designated. The contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The awarding authority may make changes in any periodic estimate submitted by the contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, but such changes or any requirement for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided, that the awarding authority may, within seven days after receipt, return to the contractor for correction, any periodic estimate which is not in the

required form or which contains computations not arithmetically correct and, in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter. The provisions of section thirty-nine G shall not apply to any contract for the construction, reconstruction, alteration, remodeling, repair or demolition of any public building to which this section applies.

All periodic estimates shall be submitted to the awarding authority, or to its designee as set forth in writing to the contractor, and the date of receipt by the awarding authority or its designee shall be marked on the estimate. All periodic estimates shall contain a separate item for each filed subtrade and each sub-subtrade listed in sub-bid form as required by specifications and a column listing the amount paid to each subcontractor and sub-subcontractor as of the date the periodic estimate is filed. The person making payment for the awarding authority shall add the daily interest provided for herein to each payment for each day beyond the due date based on the date of receipt marked on the estimate.

A certificate of the architect to the effect that the contractor has fully or substantially completed the work shall, subject to the provisions of section thirty-nine J, be conclusive for the purposes of this section.

Article 3. CLAIMS FOR UNFORESEEN CONDITIONS

(General Laws, Chapter 30, Section 39N as most recently amended by Chapter 774 of the Acts of 1972)

Every contract subject to section forty-four A of chapter one hundred and forty-nine or subject to section thirty-nine M of chapter thirty shall contain the following paragraph in its entirety and an awarding authority may adopt reasonable rules or regulations in conformity with that paragraph concerning the filing, investigation and settlement of such claims:

If, during the progress of the work, the contractor or the awarding authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those shown on the plans or indicated in the contract documents either the contractor or the contracting authority may request an equitable adjustment in the contract price of the contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a contractor, or upon its own initiative, the contracting authority shall make an investigation of such physical conditions, and, if they differ substantially or materially from those shown on the plans or indicated in the contract documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the plans and contract documents and are of such a nature as to cause an increase or decrease in the cost of performance of the work or a change in the construction methods required for the performance of the work which results in an increase or decrease in the cost of the work, the contracting authority shall make an equitable adjustment in the contract price and the contract shall be modified in writing accordingly.

Article 4. CLAIMS FOR DELAY

(General Laws, Chapter 30, Section 390 as added by Chapter 116 of the Acts of 1973)

Every contract subject to the provisions of section thirty-nine M of this chapter or subject to section forty-four A of chapter one hundred forty-nine shall contain the following provisions (a) and (b) in their entirety and, in the event a suspension, delay, interruption or failure to act of the awarding authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the general contractor for payment for an increase in the cost of his performance as provisions (a) and (b) give the general contractor against the awarding authority, but nothing in provisions (a) and (b) shall in any way change, modify or alter any other rights which the general contractor or the subcontractor may have against each other.

(a) The awarding authority may order the general contractor in writing to suspend, delay, or interrupt all or any part of the work for such period of time as it may determine to be appropriate for the convenience of the awarding authority; provided however, that if there is a suspension, delay or interruption for fifteen days or more or due to a failure of the awarding authority to act within the time specified in this contract, the awarding authority shall make an adjustment in the contract price for any increase in the cost of performance of this contract but shall not include any profit to the general contractor on such increase; and provided further, that the awarding authority shall not make any adjustment in the contract price under this provision for any suspension, delay, interruption or failure to act to the extent that such is due to any cause for which this contract provides for an equitable adjustment of the contract price under any other contract provisions.

(b) The general contractor must submit the amount of a claim under provision (a) to the awarding authority in writing, as soon as practicable after the end of the suspension, delay, interruption of failure to act and, in any event, not later than the date of final payment under this contract and, except for costs due to a suspension order, the awarding authority shall not approve any costs in the claim incurred more than twenty days before the general contractor notified the awarding authority in writing of the act of failure to act involved in the claim.

Article 5. DECISIONS AND APPROVALS BY ENGINEER OR ARCHITECT

(General Laws, Chapter 30, Section 39P, as added by Chapter 1164 of the Acts of 1973)

Every contract subject to section thirty-nine M of this chapter or section forty-four A of chapter one hundred forty-nine which requires the awarding authority, any official, its architect or engineer to make a decision on interpretation of the specifications, approval of equipment, material or any other approval, or progress of the work, shall require that the decision be made promptly and, in any event, no later than thirty days after the written submission for decision; but if such decision requires extended investigation and study, the awarding authority, the official, architect or engineer shall, within thirty days after the receipt of the submission, give the party making the submission written notice of the reasons why the decision cannot be made within the thirty day period and the date by which the decision will be made.

Article 6. PREFERENCE IN EMPLOYMENT, WAGES

(General Laws, Chapter 149 Section 26 as most recently amended by Chapter 665 of the Acts of 1986 and Chapter 552 of the Acts of 1991).

In the employment of mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works by the commonwealth, or by a county, town or district, or by persons contracting or subcontracting for such works, preference shall first be given to citizens of the commonwealth who have been residents of the commonwealth for at least six months at the commencement of their employment who are male veterans as defined in clause Forty-third of section seven of chapter four, and who are qualified to perform the work to which the employment relates; and secondly, to citizens of the commonwealth generally who have been residents of the commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States, and every contract for such work shall contain a provision to this effect. Each county, town or district in the construction of public works, or persons contracting or subcontracting for such works, shall give preference to veterans and citizens who are residents of such county, town or district. The rate per hour of the wages paid to said mechanics and apprentices, teamsters, chauffeurs and laborers in the construction of public works shall not be less than the rate or rates of wages to be determined by the commissioner as hereinafter provided; provided, that the wages paid to laborers employed on said works shall not be less than those paid to laborers in the municipal service of the town or towns where said works are being constructed; provided, further, that where the same public work is to be constructed in two or more towns, the wages paid to laborers shall not be less than those paid to laborers in the municipal service of the town paying the highest rate; provided, further, that if, in any of the towns where the works are to be constructed, a wage rate or wage rates have been established in certain trades and occupations by collective agreements or understandings in the private construction industry between organized labor and employers, the rate or rates to be paid on said works shall not be less than the rates so established, provided, further that in towns where no such rate or rates have been so established, the wages paid to mechanics and apprentices, teamster, chauffeurs and laborers on public works, shall not be less than the wages paid to the employees in the same trades and occupations by private employers engaged in the construction industry. This section shall also apply to regular employees of the commonwealth or of a county, town or district, when such employees are employed in the construction, addition to or alteration of public buildings for which special appropriation of more than One Thousand Dollars are provided. Payments by employers to health and welfare plans, pension plans and supplementary unemployment benefit plans under collective bargaining agreements or understandings between organized labor and employers shall be included for the purpose of establishing minimum wage rates as herein provided.

Article 7. HOURS OF WORK

(General Laws, Chapter 149 Section 34 as most recently amended by Chapter 552 of the Acts of 1991).

Every contract, except for the purchase of material or supplies, involving the employment of laborers, workmen, mechanics, foremen or inspectors, to which the commonwealth or any county or town, subject to section thirty, is a party, shall contain a stipulation that no laborer, workman, mechanic, foreman or inspector working within the commonwealth, in the employ of the contractor, subcontractor or other person doing or contracting to do the whole or a part of the work contemplated by the contract, shall be required or permitted to work more than eight hours in any one day or more than forty-eight hours in any one week, or more than six days in any one week, except in case of emergency, or, in case any town subject to section thirty-one is a party to such a contract, more than eight hours in any one day, except as aforesaid, provided, that in contracts entered into by the department of highways for the construction or reconstruction of highways there may be inserted in said stipulation a provision that said department, or any contractor or subcontractor for said department, may employ laborers, workmen, mechanics, foremen and inspectors for more than eight hours in any one day in such construction or reconstruction when, in the opinion of the commissioner of labor and industries, public necessity so requires. Every such contract not containing the aforesaid stipulation shall be null and void.

Article 8. WORK BY FOREIGN CORPORATIONS

(General Laws, Chapter 30 Section 39L, as most recently amended by Chapter 3 of the Acts of 1967).

The Commonwealth and every county, city, town, district, board, commission or other public body which, as the awarding authority, requests
proposals, bids or subbids for any work in the construction, reconstruction, alteration, remodeling, repair or demolition of any public building or other public works (1) shall not enter into a contract for such work with, and shall not approve as a subcontractor furnishing labor and materials for a part of any such work, a foreign corporation which has not filed with such awarding authority a certificate of the state secretary stating that such corporation has complied with sections three and five of chapter one hundred and eighty-one and the date of such compliance, and (2) shall report to the state secretary and to the department of corporations and taxation any foreign corporation performing work under such contract or subcontract, and any person, other than a corporation, performing work under such contract or subcontract, and residing or having a principal place of business outside the Commonwealth.

END OF SUPPLEMENTAL CONDITIONS

BUILDING MAINTENANCE SERVICE CONTRACT

SPECIAL CONDITIONS

The following provisions supplement the General Conditions of the Contract for Non-Technical Services. In the event of conflict or discrepancy between the General Conditions and these Special Conditions, the provisions of the Special Conditions shall govern.

1.0 SUMMARY OF WORK

A. The Work under the Contract consists of:

1. Furnishing all labor, materials, tools, equipment and supervision necessary to accomplish the work described herein,in accordance with all specifications and requirements of the Project Manual.

2. All work either shown on the Drawings (if any) or included in the specifications unless specifically indicated as not to be done.

B. In addition, the work under the Contract includes:

1. Work outside the Project Site as called for in the Contract Documents and as required for the performance of the Work.

2. The restoration of any items damaged or destroyed by encroaching upon areas outside the Project Site.

3. Providing and restoring, where appropriate, all temporary facilities.

C. The Proposed Contract Price shall be complete costs, including overhead, profit, insurance, transportation, and all other costs connected with, or incidental to, the work described.

2.0 PROJECT SITE

A. The areas of work for this contract shall be the mechanical room at the Peirce School, the area of the property behind the dumpsters and the outboard edge of the asphalt driveway from the front of the building to the location of the new emergency generator.

3.0 NOTICE TO PROCEED/FAILURE TO COMMENCE WORK

A. From time to time during the term of this Contract, the Contractor shall be issued notice to proceed in the form of a written Work Order issued by the Public Building Department listing specific work items to be performed in accordance with this Contract. The Contractor shall commence performance of the work within the time specified in the Work Order, and in no event within less than the time limits stated in the Work Specifications contained in the Project Manual.

B. In the event the contractor fails to commence performance within the specified time, and/or notifies the City of its inability to do so, the City shall call upon the second Contractor awarded pursuant to this bid (if any) to perform the required work.

C. In the event the second Contractor awarded pursuant to this bid is unable to commence performance within the required time, or if there is no second Contractor, the City reserves the right to contract for the work on the open market at the then prevailing rate and to deduct from any monies due or that may thereafter become due to the contractor the difference between the price stated for the work in the contract and the actual cost thereof to the City.

D. In the event of Contractor’s repeated failure to commence work within the time required by these specifications, the City shall exercise all provisions contained in the General Conditions regarding default, suspension or termination of this contract.

4.0 PAYMENT

A. Once each month, on a date estabished by the City, the Contractor may submit an Application for Payment (Invoice) for the work performed during the preceeding month. The Contractor may invoice for all Work Orders completed and accepted during the preceeding month, and for all Work Orders either partially completed or not yet accepted by the City.

B. Upon receipt of the Application for Payment, the City will, within fifteen days, make payment in full for all Work Orders completed and accepted during the preceeding month. For Work Orders partially completed or not yet accepted, the City will make payment for the value of the Work Order completed during the preceeding month, less a retainage of 5% of the estimated total of the Work Order. The City will make final payment for partially completed Work Orders, including any retained amounts, upon completion and acceptance of the work and receipt of an Application for Payment at the end of the month in which the work is completed and accepted.

5.0 COMMUNICATIONS

A. All notices, demands, requests, instructions, approvals and claims must be in writing.

B. Any such notice shall be deemed to have been given as of the time of delivery, or of actual receipt in the case of telegrams or, in the case of mailing, when it should have been received in due course of post.

C. For communicating purposes, the office address of the Contractor shall be that stated on the signature page of the contract; that of the City shall be as stated in the Invitation for Bids. Any subsequent change in address of either party shall be communicated to the other in writing.

6.0 PLANS AND SPECIFICATIONS

A. The City will furnish to the Contractor, without charge, all copies of the specifications reasonably necessary in the performance of the contract work.

7.0 COORDINATION

The Contractor shall:

A. Supply to the City the name and telephone number of a responsible person who may be contacted during off-hour emergencies during the term of the Contract.

B. Cooperate at all times with the City and the Project Manager, and ensure the cooperation of his key personnel and that of his subcontractors.

8.0 CONDUCT OF THE WORK

A. The work must be completed in a continuous uninterrupted operation. The Contractor must use sufficient workforce and adequate equipment to complete all the necessary work requirements within a minimum period of time.

B. The work shall be conducted between the hours of 8:00 a.m. and 5:00 p.m. on Monday through Friday. No work shall be done on holidays, Saturdays or Sundays except as specifically requested and authorized by the City.

C. Under no circumstances will the contractor be paid at a premium or overtime rate for any work performed without the express advance authorization of the City.

D. The Contractor is responsible for the security of partially completed work until the project is finally accepted by the City.

9.0 ALTERATION

A. The Contractor shall patch, repair and/or replace all existing materials and surfaces remaining exposed after installation of new work which have been affected by alteration or removal of existing work. All patch and repair work shall match existing.

10.0 GENERAL DIRECTIONS

A. Damage to Persons and Property

Any damage to buildings, roads, public roads, bituminous concrete areas, fences, lawn areas, trees, shrubbery, electric or telephone poles, underground utilities, etc., shall be repaired by the Contractor at his own expense. Damaged property shall be returned to its original condition prior to the damages within a reasonable time period, except all utility outages shall be repaired immediately.

B. Protection of Persons and Property

The Contractor shall, at all times, leave an unobstructed way along the roadways and walks, and shall maintain barriers and lights for the protection of all persons and property in all locations where he has materials stored or work going on, and during the entire time such work is going on or material is stored.

C. Shutdown of Services

The Contractor's attention is especially called to the fact that continuous operation of building utilties and services is mandatory. During the period of construction of the new work and/or alterations to the existing work, the progress and sequence of installation shall be carefully planned and approved by the City. If any building is to be left without heat, hot water, city water, electricity, gas, sanitary facilities, or any other services, the Contractor shall provide reasonable written notice to the City before proceeding.

D. Care of Work

All work is to be carefully protected so that no injury will come to it from water, frost, accident, or any other cause and any injury which may come to any of the work shall be repaired immediately by the Contractor at his own expense and without additional cost to the City. This shall also apply to any abutting or adjoining work on premises. The Contractor shall be responsible for any damage and in the event of such damage, the Contractor shall repair the damage immediately at his own cost and without additional cost to the City.

E. Removal of Debris

Debris of any nature shall be completely removed from the site at the end of each days work and disposed of in accordance with all Federal, State and local regulations.

F. The Contractor is responsible for the security of all work until it is accepted by the City.

11.0 TEMPORARY UTILITIES

A. Prior to execution of the Work, the Contractor shall confer with a representative of the Public Building Department regarding the use of utilities and facilities at the worksite. No City utilities or facilities are to be used by the Contractor in the performance of this Contract without the prior approval of the City.

12.0 SUBMISSION OF PAYROLLS

A. The Contractor shall, with each invoice submitted during the term of this Contract, submit to the City two (2) legible copies of his payrolls documenting the wages paid to all employees performing on site labor relating to the work of this Contract. These copies shall be prepared on forms supplied by the City.

13.0 DRAWINGS (IF APPLICABLE)

A. The drawings attached herein and such drawings as may be issued per addendum, shall constitute an integral part of this section and shall serve as the working drawings.

B. Drawings shall not be scaled. Field verification is directed since actual locations, dimensions and levels are existing.

C. All items not specifically mentioned in the specifications or noted on the drawings, but which are obviously necessary to make a complete working installation, shall be included.

14.0 MATERIALS

A. Unless specifically so stated to the contrary the use of a manufacturer's name or style number is not restrictive, and is intended solely as an identification of the type and quality of the materials and services required. In all cases, the words “or approved equal” if not inserted are implied.

B. An item equal to that named or described in the specifications may upon written approval of the City be furnished by the Contractor. An item shall be considered equal to the item so named or described if (1) it is at least equal in quality, durability, appearance, strength and design; (2) it will perform at least equally the function imposed by the general design for the public work being contracted for or the material being purchased; (3) it conforms substantially, even with deviations, to the detailed requirements for the item in the specifications.

C. The name and identification of all materials other than the one specifically named shall be submitted to the City in writing for approval, prior to purchase, use or fabrication of such items. Approval shall be at the sole discretion of the City, shall be in writing to be effective, and the decision of the City shall be final. The City may require tests of all materials so submitted to establish quality standards at the Contractor’s expense.

D. For the use of material other than the one specified, the Contractor shall assume the cost of and responsibility for satisfactorily accomplishing all changes that may be required in the work as shown. All directions, specifications and recommendations by manufacturers for the installation, handling, storing, adjustment, and operation of their equipment shall be complied with and responsibility for proper performance shall continue to rest with the Contractor.

E. The Contractor shall not have any right of appeal from the decision of the City condemning any materials furnished if the Contractor fails to obtain the approval for substitution in accordance with these provisions. If any substitutuin is more costly, the Contracotr shall pay for such costs

15.0 WARRANTY AND INDEMNIFICATION

A. In addition to other guarantees or warranties required under law or other sections of the specification, the Contractor warrants all materials furnished and labor performed under this Contract to be free from defects or errors in workmanship or installation for a period of one year from the date of Completion of the work, as certified by the Project Manager. The Contractor shall indemnify the Authority for the full cost of any damage to the property that may result by reason of such defects or errors and shall indemnify the Authority from and against any and all claims, demands. losses, costs, expenses, liabilities and damages, including reasonable attorney's fees and expenses, arising out of or on account of this Contract, including but not limited to claims brought against the Authority for alleged infringement of patents based upon any methods of construction or application of materials furnished under the Contract.

B. The Contractor shall indemnify, hold harmless and defend the City and its departments, officers, employees, servants, and agents from and against all actions, causes of actions, claims, demands, damages, costs, loss of services, expenses and compensation, including attorney’s fees and interest arising out of or resulting directly or indirectly from the services rendered pursuant to this Contract, provided that any such action, cause of action, claim, demand, damage, cost, loss of service, expense, compensation (1) in any way grows out of bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, which (2) is caused in whole or in part by any act or omission of the Contractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

END OF SECTION

CITY OF NEWTON

MINORITY/ WOMEN BUSINESS ENTERPRISE PLAN

DECEMBER 1, 1999

STATEMENT OF POLICY:

Whereas it is the policy of the government of the United States of America, the Commonwealth of Massachusetts and the City of Newton that no person shall be discriminated against in any manner whatsoever on the grounds of race, religion, color, sex, handicap or national origin; and

Whereas, it is the policy of the government of the United States of America that no person shall, on the grounds of race, color, sex or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program of activity funded entirely or in pail by the City, the State or Federal government; and

Whereas, it is the policy of the government of the United States of America to encourage that Minority/Women Business Enterprises shall have the maximum practicable opportunity to participate in Federal and State assisted projects; and all City funded contracts; and

Whereas, it is the policy of the City of Newton to encourage that minority/women business enterprises shall have the maximum practicable opportunity to participate in all City funded contracts; and

Whereas, the City of Newton, as a recipient of Federal and State funds subscribes to the above policies and will fully comply With Federal, State and local laws and directives governing non-discrimination, equal opportunity and affirmative action in all municipal activities; and

Whereas, to further enunciate the equal opportunity policy of the City of Newton's Minority/Women Business Program, the following responsibilities are specified

> This MINORITY/ WOMEN Business Enterprise Plan sets forth the administrative standards for the further implementation of the City of Newton's policy of the utilization of minority contractors and subcontractors.
>
> The City of Newton strongly affirms that it will not discriminate in any contractual procedures against any persons because of race, color, religion, age, disability, sex or national origin. This policy shall be administered with a positive supportive attitude.
>
> It is the responsibility of the City of Newton to take affirmative steps to implement this policy to insure equality of opportunity in conducting the Program including notifying those persons and businesses doing business with the City, that contracts for goods, services and construction, shall be made Without reference or regard to race, color, sex, age, handicap, religion or national origin.

David B. Cohen Mayor

CITY OF NEWTON
MINORITY/ WOMEN BUSINESS ENTERPRISE PLAN

DECEMBER 1, 1999

I. DEFINITIONS:

A. Minority Person- the term includes a person who is of Black Hispanic, Asian, American Indian or Cape Verdean origin.

B. Minority Business Enterprise (MBE) -- the term shall mean a business a) that is certified by SOMWBA; or b) 1 provides evidence satisfactory to the City's Affirmative Action Officer that it is a business owned or controlled by one or more of the following:

- an individual who is a minority person,
- a partnership or joint venture controlled by minority persons in which at least 51 % of the ownership interest is held by minority persons or,
- a corporation or other entity controlled by minority persons and in which at least 51 % of the stock is owned by one or more minority persons.

C. Contract Compliance Officer - the Chief Procurement Officer or his/her designee responsible for the implementation of Newton's Minority/Women Enterprise Plan ("MWBE Plan") and activities.

D. MCAD - Massachusetts Commission Against Discrimination.

E. SOMWBA -- State Office of Minority/Women Business Assistance,

F. City - The City of Newton.

G. Women Business Enterprise (WBE) - the term shall mean a business a) that is certified by SOMWBA; or b) provides evidence satisfactory to the City's Affirmative Action Officer that it is a business owned or controlled by one or more of the following:

- an individual who is a woman.
- a partnership or joint venture controlled by women in which at least 51% of the ownership interest is held by women, or
- a corporation or other entity controlled by women and in which at least 51% of the stock is owned by one or more women.

H. MWBE – Minority or Women Business Enterprise

II. GOALS:

Newton's Minority/Women Enterprise Plan ("MWBE Plan") shall be guided by the goals presented below to promote minority/women opportunities within the City.

These goals comprise the framework for those activities to be implemented as part of the MWBE Plan:

To take affirmative action in expanding opportunities for minority and women owned firms in obtaining contracts within the City of Newton.

To assure that all contractors, regardless of race color, religion, creed, national origin, sex, age, ancestry or handicap, shall have equal opportunity to City contracting activities.

To award, of the total annual City contract dollars expended, 10 percent to MBE and 5 percent to WBE for construction; for goods and services, 5 percent WBE and 5 percent MBE.

III. SOLICITATION ACTIVITIES:

To notify MWBEs of upcoming contracts for construction, professional services and supplies, funded in whole or in part with Federal, State, and City funds, the following activities will be undertaken. In addition on a regular basis, the City of Newton will distribute to its listing of MWBEs and SOMWBA, a summary of upcoming contract opportunities which are subject to the City's MWBE Plan.

A. Construction Contracts

All construction contracts with an estimated value over $50,000 will be formally advertised within local, regional, minority and special interest publications at least 14 days prior to the bid opening date.

For all such construction contracts a "Notice of Solicitation" of a project going out to bid will be distributed to appropriate SOMWBA or City certified firms at least 14 days prior to the bid opening date.

B. Contracts for Professional Services

The City of Newton will send notification of its advertised Request for Proposals to appropriate! SOMWBA or City certified firms Responding MWBE firms will be considered for contract award within the bounds of generally accepted management practice or with the applicable procurement law relating to securing the lowest cost and best services available.

C. Procurement of Supplies

The City of Newton will (where feasible) utilize MWBEs for the procurement of supplies in accordance with City purchasing procedures. These efforts will be documented and reported to MCAD, and the Mayor's office on a quarterly basis.

IV. CONSTRUCTION ACTIVITIES:

A. Goals

The City of Newton bid documents and contracts with an estimated value over $50,000 will contain the City's goal of 10% for MBE and 5% for 'WBE utilization for subcontracts,

B. Pre-Bid Conference

To affirmatively further the opportunities available to prospective bidders, the City will hold a pre-bid conference 5-7 days prior to the bid opening date for all City construction contracts and subcontracts with an estimated value over $50,000.

The pre-bid conference will provide an opportunity for contractors to: review and clarify the technical requirements of the projects, review the City's MWBE Plan; and review Equal Opportunity requirements. The City will advertise this conference and extend invitations to interested contractors as part of the notice of solicitation.

C. **Bid Submission**

All bids for City of Newton contracts with -an estimated value over $50,000 shall include a certification of intent to be completed by the bidder swing his/her intent to comply with the City's MWBE Plan. Failure to include this certification shall be an informality which may be waived if such certification is received prior to the award of the contract.

D. **Contract Execution**

Upon notification of award of the contract, the bidder shall provide a written plan detailing how it will comply with the MWBE Plan

E. **Monitoring**

Throughout the duration of the contract, the City of Newton through its Contract Compliance Officer, will monitor the progress and activities of all contractors and subcontractors as they attempt to comply with the MWBE Plan.

F. **Enforcement**

In the case of clear neglect to make a good faith effort to comply with this MWBE Plan, the City of Newton reserves the right to designate contractor, after a hearing, as ineligible for future City bid awards.

V. CONTRACT COMPLIANCE OFFICER/DUTIES AND RESPONSIBILITIES:

The Contract Compliance Officer, as liaison between minority firms and the City of Newton will have the overall responsibility for the implementation of Newton's MWBE Plan. Thi's responsibility includes the development, management, dissemination of information; the provision of technical assistance to minority firms including clarification of procedures to be implemented; maintenance of relevant documentation; completion of reporting requirements; and performance of monitoring and evaluation activities; and maintenance and updating of listings of minority/women business.

The Contract Compliance Officer has oversight of all City procurements for construction, professional services and supplies and shall coordinate the implementation of the MWBE Plan with other City departments.

THE CITY OF NEWTON, MASSACHUSETTS
SUPPLEMENTAL EQUAL EMPLOYMENT OPPORTUNITY
ANTI-DISCRIMINATION AND AFFIRMATIVE ACTION PROGRAM

I. The requirements hereinafter set forth apply to construction contracts which involve an expenditure by the City of $50,000 or more.

II. For purposes of this contract "minority" refers to Asian Americans, Black, Hispanics American Indians and Cape Verdeans. The City refers to the- City of Newton

III. During the performance of this contract the Contractor and all of (his) Subcontractors (hereinafter collectively referred to as the Contractor) , for himself, his assignees, and successors ,in interest, agree as follows:

1. In connection with the performance of work under this contract, the Contractor shall not discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age or sex. The aforesaid provision shall include, but not be limited to, the following: layoff; termination; rates of pay or other forms of compensation; conditions or privileges of employment; and the selection of apprenticeship. The Contractor shall post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the City setting forth the provisions of the Fair Employment Practices Law of the Commonwealth (MGL Chapter 151B) . (See Attachment A)

2. In connection with the performance of work under this contract, the Contractor shall undertake in good faith, affirmative action measures designed to eliminate any discriminatory barriers in the terms and conditions of employment on the grounds of race, color, religious creed, national origin, age or sex, and to eliminate and remedy any effects of such discrimination -.in the past. Such affirmative action shall. entail positive and aggressive measures to ensure equal employment: opportunity in the areas of hiring, upgrading, demotion or transfer, recruitment, 'Layoff or termination, rate of compensation, and in-service or apprenticeship training programs. This affirmative action shall. include all action required to guarantee equal employment opportunity for all persons, regardless of race, color, religious creed, national origin, age or sex. A 'purpose of- this provision is to ensure to the fullest extent possible an adequate supply of skilled tradesmen for this and future City public construction projects

IV.

1. As part of this obligation of remedial action under the foregoing section, the contractor shall maintain on this project a not less than 5 percent ratio of minority employee man hours to total man hours in each job category, including, but not limited to, bricklayers, carpenters, cement masons, electricians, ironworkers, operating engineers, and those "classes of work" enumerated in Section 44C of Chapter 149 of the Massachusetts General Laws.

2. In the hiring of minority journeymen, apprentices, trainees and advanced trainees, the Contractor shall rely on referrals, from the Contractor's affirmative action program approved by the City, traditional referral methods utilized by the construction industry, and referrals from agencies, not more than three in number at any one Lime, designated by the Liaison Committee or the City.

V.

1. At the discretion of the City, there may be established for the life of this contract a body to be known as the Liaison Committee, The Liaison Committee shall be composed of the Compliance Officer and one representative each from the Departments administering this project, hereinafter called the administering Departments, and such other representatives as may be designated by the City.

2. The Contractor (or, his/her agent, if any, designated by him/her as the onsite equal employment opportunity officer) shall recognize the Liaison Committee as the affirmative action body, and shall establish a continuing working relationship with the Liaison Committee on all matters related to minority recruitment, referral, employment and training.

3. The Contractor shall prepare manning tables on a quarterly basis.* These shall be broken down into projections, by week, for workers required in each trade. Copies shall be furnished one week in advance of the initiation of work and quarterly thereafter to the City and to the Liaison Committee.

4. Records of employment referral orders, prepared by the Contractor, shall be made available to the City and to the Liaison Committee on request.

5. The contractor shall prepare weekly reports in a form approved by the City of hours worked in each trade by each employee, identified as minority or non-minority. Copies of these reports shall be provided at the end of each week to the City and to the Liaison Committee.

* If job is less than three months, prepare for length of job.

VI. If the Contractor shall use any sub contractor on any work performed under this contract, he/she shall Lake affirmative action to negotiate with qualified minority subcontractors. This affirmative action shall cover both pre-bid and post-bid periods. It shall include notification to the State Office of: Minority *Business Assistance* or As designee, while bids are in preparation, of all products, work or services for which the Contractor intends to negotiate bids.

VII. In the employment of journeyman, apprentices, trainees, and advanced trainees, the Contractor shall give preference to citizens of the Commonwealth who have served in the armed forces of the United States in time of war and have been honorably discharged therefrom or released from active duty therein, and who are qualified to perform the work to which the employment relates, and, secondly to citizens of the Commonwealth generally, and, if such cannot be obtained in sufficient numbers, then to citizens of the United States

VIII. A designee of the City and a designee of the Liaison Committee shall each have the right of access no the Construction site,

IX. **Compliance with Requirements**
The Contractor shall comply with the provisions of Chapter 151B of the Massachusetts General Laws, which are herein incorporated by reference and made as amended by Executive Order 227, and of Chapter 151B as amended, of the Massachusetts General Laws, both *of which* are herein incorporated by reference and made a part of this contract.

X. **Non-Discrimination**
The Contractor, in the performance of all work after award, and prior to completion of the contract work, will not discriminate on the grounds of race, color, religious creed, national origin, age or sex in employment practices, in the selection or retention of sub-contractors, or in the procurement of materials and rentals of equipment.

XI. **Solicitations for sub-Contracts and for the Procurement of Materials and Equipment**
In all solicitations either by competitive bidding or negotiation made by the Contractor either for work to be performed under a subcontract or for the procurement of materials or equipment, each potential subcontractor or supplier shall be notified in writing by the Contractor of the Contractor's obligations under his contract relative to non-discrimination and affirmative action.

XII. **Bidders Certification Requirement**

1. The following certification statement will be inserted in the bid document just above the bidder's signature.

"The bidder hereby certifies he shall comply with tile minority manpower ratio and specific action steps contained in the City of Newton, Massachusetts Supplemental Equal Employment-- Opportunity Anti-Discrimination and Affirmative Action Program. The Contractor receiving the award of the contract

shall be required to obtain from each of its subcontractors and submit to the contracting or, administering agency prior to the performance of any work under said contract a certification by said subcontractor, regardless of tier, that it will comply with the minority manpower ratio and specific affirmative action steps contained in the City of Newton Massachusetts Supplemental Equal Employment Opportunity Anti -Discrimination and Affirmative Action Program.

XIII. **Contractor's Certification**

A Contractor's' certification form must be signed by all successful low bidders prior to award by the City. A Contractor shall not be eligible for award of a contract unless the contractor has executed and submitted the Contractor's Certification, which shall be deemed a part of the resulting contract. (See Attachment B)

XIV. **Subcontractor's Certification**

Prior to the award of any subcontract, regardless of tier, the prospective subcontractor must execute and submit: to the Prime Contractor a subcontractor's certification setting forth the subcontractor's compliance with this program, which shall be deemed a part of the resulting subcontract. (See Attachment C)

XV. **Compliance - Information, Reports and Sanctions**

1. The Contractor will provide all information and reports Required by the administering department or, the City on instruction issued by either of them and will permit access to its facilities and any books, records, accounts and other sources of information which may be determined by the City to affect the employment of personnel. This provision shall apply only to information pertinent to the City's supplementary affirmative action contract requirements. Where information required is in the exclusive possession of another who fails or refuses to furnish this information, the Contractor shall so certify to the administering department or the City as appropriate and shall set forth what efforts he/she has made to obtain the information.

2. Whenever the administering department, the City, or the Liaison Committee believes the General Contractor or any Subcontractor may not-, be operating in compliance with the terms of this Section, the City directly, or through its designated agent, shall conduct: an appropriate invest ig at ion, and may confer with the parties, to determine if such Contractor is operating in compliance with the terms of this Section. If the City or its agent finds the General Contractor or any Subcontractor not in compliance, it shall make a preliminary report on non-compliance, and notify such Contractor in writing of such steps as will in the judgement of the City or its agent bring such Contractor into compliance. In the event. that such Contractor fails or refuses to fully perform such steps, the City shall make a final report of non-compliance, and recommend to the administering department the imposition of one or more of the sanctions listed below. If, however, the City believes the General Contractor or any Subcontractor has taken or is taking every possible measure to achieve compliance, it shall not make a final report of non-compliance. within fourteen days at the receipt of the recommendations of the City, the administering department shall move to impose one or more of the following sanctions, as it may deem appropriate to attain full and effective enforcement:

   (a) The recovery by the administering department from the General Contractor of 1/100 of 11 of the contract award price or $1000 whichever sum is greater, in the nature of liquidated damages or
   if a Subcontractor is in non-compliance, the recovery by the administering department from the General Contractor, to be assessed by the General Contractor as a back charge against the Subcontractor, of 1/10 of 1% of the sub-contract price, or $400 whichever sum is greater, in the nature of liquidated damages, for each week that such party fails or refuses to comply

   (b) The suspension of any payment of part thereof due under the contract until such time as the General Contractor or any Subcontractor is able to demonstrate his compliance with the terms of the contract;

   (c) The termination, or cancellation, of the contract, in whole or in part, unless the General Contractor or any Subcontractor is able to demonstrate within a specified time his/her compliance
   with the terms of the City's affirmative action construction contract requirements; OR,

(d) The denial to the General Contractor or any Subcontractor of the right to participate in any future contracts awarded by the administering department for a period of up to three years.

3. If at any time after the imposition of one or more of the above sanctions (unless the contract. has been terminated), a Contractor is able to demonstrate that he/she is in compliance with this section, he/she may request the City to suspend the sanctions conditionally pending a final determination by the City as to whether the Contractor is in compliance. Upon final determination of the City, the administrating department, based upon the recommendation of the City, shall either lift the sanctions or continue them.

4. Sanctions enumerated under Section XV shall not: be imposed by the City except after the General Contractor or Subcontractor have had an opportunity for full and fair hearing with City. The non-compliance investigation shall be initiated without prior notice to the contractor. Any sanctions to be imposed shall be, set forth fully and completely in writing, and may then be appealed to t-he City in writing by the Contractor.

.XIV. **Severability**

The provisions of this section are severable, and if any of these provisions shall be held unconstitutional by any court of competent jurisdiction, the decision of such court. shall not, affect or impair any of the remaining provisions.

FAIR EMPLOYMENT LAW

The Fair Employment Law declares that it is illegal to discriminate on the basis of race, color, religious creed, national origin, sex, sexual orientation, age, ancestry or disability

IT IS UNLAWFUL:

- to print or circulate any advertisement or use any application form which directly or indirectly specifies any limitation on the basis of race, color, religious creed, national origin, sex, sexual orientation, age, ancestry or disability.
- to discharge or refuse to hire arty individual on file basis of their race, color, religious creed, national origin, sex, sexual orientation, age, ancestry, or disability.
- to discriminate against any individual in matters relating to compensation, terms, conditions, or privileges of employment because of their race, color, religious creed, national origin, sex, sexual orientation, age, ancestry or disability.
- to require a woman to leave her job at some arbitrary stage in her pregnancy or to refuse to let her return to work until a specified time set by the employer.
- to grant a female employee at least eight weeks leave for purposes of childbirth or to treat her absence differently than any other absence due to disability.
- to require an employee to remain at work during any day or part thereof that s/he observes as a religious holiday provided that the employee gives a ten-day notice and the absence does not cause undue hardship to the employer.
- to discharge or refuse to hire any person because of their failure to furnish information concerning admission to a center for the treatment of mentally ill persons.
- to discriminate against a job applicant for failure to furnish information, written or oral, concerning.- A) an arrest, detention or disposition regarding a violation of law in which no conviction resulted; B) a first conviction for any of the following misdemeanors: driving under the influence, simple assault, speeding, minor traffic violations, disturbance of the peace; or C) conviction for a misdemeanor where the date of the conviction or end of period of incarceration, if any, occurred more than five years prior to the employment application, and the applicant has not been convicted of any offense within the five years immediately before the date of application.

RETALIATION

It is illegal to retaliate against any person because s/he has opposed any practices forbidden under this Chapter or because s/he has filed a complaint, testified, or assisted in any proceeding before the Commission. It is also illegal to aid, abet, incite, compel or coerce the doings of any of the acts forbidden under this Chapter or to attempt to do so.

SEXUAL HARASSMENT

151B:1,18 The term "sexual harassment" shall mean sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature when (a) submission to or rejection of such advances, requests or conduct is made either explicitly or implicitly a term or condition of employment, or as a basis for employment decisions: (h) such advances,, requests or conduct have the purpose or effect of unreasonably interfering with an individual's work performance by creating an intimidating, hostile, humiliating or sexually offensive work environment.

COMPLAINTS

All complaints must be filed in writing. Information on the filing of complaints can be obtained by contacting the MASSACHUSETTS COMMISSION AGAINST DISCRIMINATION at the following locations:

Boston office:
One Ashburton Place
Room 601
Boston, MA 02108
(617) 727-3990

Springfield office:
436 Dwight Street
Suite 315
Springfield, MA 01103
(4 13) 739-2145

CITY OF NEWTON

WAGE RATE REQUIREMENTS

1. GENERAL

A. This section summarizes the requirements for the payment of wages to laborers and mechanics employed under the Contract.

B. Other duties and requirements of law which may not be specified in this section apply and are inherently a part of the Contract.

2. WAGE RATES

A. The rate per hour to be paid to mechanics, apprentices, teamsters, chauffeurs, and laborers employed on the Work shall not be less than the rate of wages in the attached "Minimum Wage Rates" as determined by the Commissioner of Labor and Industries. The schedule of prevailing wage rates will be updated annually for all public construction projects lasting longer than one (1) year. The contractor shall pay the prevailing wage rate set out in the applicable prevailing wage rate schedule. Increases in prevailing wage rates shall not be the basis for a change order.

B. Keep posted on the site a legible copy of said schedule. Keep on file the wage rates and classifications of labor employed on this Work in order that they may be available for inspection by the Owner, Administrator, or the Architect.

C. Apprentices employed pursuant to this determination of wage rates must be registered and approved by the State Apprenticeship Council wherever rates for journeymen or apprentices are not listed.

D. Pay reserve police officers employed on the Work the prevailing rate of wages paid to regular police officers as required by M.G.L. c149, Sec. 34B, as amended. Such police officers shall be covered by Workmen's Compensation Insurance and Employers Liability Insurance by the Contractor.

E. The Contractor and all subcontractors shall, on a weekly basis throughout the term of the contract, provide to the City of Newton certified payroll affidavits verifying compliance with M.G.L. c.149, Sec. 27, 27A and 27B.

F. The Contractor and all subcontractors shall provide a Statement of Compliance within 15 days of the completion of its portion of the work. This statement shall be submitted to the Owner on the form found elsewhere in this section.

G. The Contractor shall maintain accurate and complete records, including payroll records, during the Contract term and for three years thereafter.

END OF SECTION

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

JOANNE F. GOLDSTEIN
Secretary of Labor and Workforce Development

GEORGE E. NOEL
Director of Labor

LAURA M. MARLIN
Commissioner of Division of Occupational Safety

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

Awarding Authority: City of Newton

Contract Number: 10-51 **City/Town:** NEWTON

Description of Work: Rebid - Replacement of the Emergency Generator at Peirce Elementary School

Job Location: 170 Temple Street, West Newton

Classification	Effective Dates and Total Rates					
Construction						
(2 AXLE) DRIVER - EQUIPMENT	12/01/2009	$44.330	06/01/2010	$44.930	12/01/2010	$45.530
	06/01/2011	$46.280	12/01/2011	$46.940	06/01/2012	$47.590
	12/01/2012	$48.620				
(3 AXLE) DRIVER - EQUIPMENT	12/01/2009	$44.400	06/01/2010	$45.000	12/01/2010	$45.600
	06/01/2011	$46.350	12/01/2011	$47.010	06/01/2012	$47.660
	12/01/2012	$48.690				
(4 & 5 AXLE) DRIVER - EQUIPMENT	12/01/2009	$44.520	06/01/2010	$45.120	12/01/2010	$45.720
	06/01/2011	$46.470	12/01/2011	$47.130	06/01/2012	$47.780
	12/01/2012	$48.810				
ADS/SUBMERSIBLE PILOT	08/01/2009	$101.110	08/01/2010	$104.640	08/01/2011	$108.760
AIR TRACK OPERATOR	12/01/2009	$47.850	06/01/2010	$48.850	12/01/2010	$50.100
	06/01/2011	$51.100	12/01/2011	$52.350		
ASBESTOS REMOVER - PIPE / MECH. EQUIPT.	12/01/2009	$40.250				
ASPHALT RAKER	12/01/2009	$47.350	06/01/2010	$48.350	12/01/2010	$49.600
	06/01/2011	$50.600	12/01/2011	$51.850		
ASPHALT/CONCRETE/CRUSHER PLANT- ON SITE	12/01/2009	$58.530	06/01/2010	$59.780	12/01/2010	$61.030
BACKHOE/FRONT-END LOADER	12/01/2009	$58.530	06/01/2010	$59.780	12/01/2010	$61.030
BARCO-TYPE JUMPING TAMPER	12/01/2009	$47.350	06/01/2010	$48.350	12/01/2010	$49.600
	06/01/2011	$50.600	12/01/2011	$51.850		
BLOCK PAVER, RAMMER / CURB SETTER	12/01/2009	$47.850	06/01/2010	$48.850	12/01/2010	$50.100
	06/01/2011	$51.100	12/01/2011	$52.350		
BOILER MAKER	10/01/2008	$54.800				

APPRENTICE: BOILERMAKER - Local29

Ratio	Step	1	2	3	4	5	6	7	8
1:5	%	65.00	65.00	70.00	75.00	80.00	85.00	90.00	95.00

Apprentice wages shall be no less than the following:

Step 1 $42.71/ 2 $42.71/ 3 $44.44/ 4 $46.17/ 5 $47.89/ 6 $49.62/ 7 $51.35/ 8 $53.07

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	02/01/2010	$68.010	08/01/2010	$69.910	02/01/2011	$70.900			
	08/01/2011	$73.000	02/01/2012	$73.990					

APPRENTICE: BRICK/PLASTER/CEMENT MASON - Local3 Newton

Ratio	Step	1	2	3	4	5
1:5	%	50.00	60.00	70.00	80.00	90.00

Apprentice wages shall be no less than the following:

Step 1 $45.71/ 2 $50.17/ 3 $54.63/ 4 $59.09/ 5 $63.55

BULLDOZER/GRADER/SCRAPER	12/01/2009	$58.190	06/01/2010	$59.430	12/01/2010	$60.680			
CAISSON & UNDERPINNING BOTTOM MAN	12/01/2009	$48.250	06/01/2010	$49.250	12/01/2010	$50.500			
	06/01/2011	$51.500	12/01/2011	$52.750					
CAISSON & UNDERPINNING LABORER	12/01/2009	$47.100	06/01/2010	$48.100	12/01/2010	$49.350			
	06/01/2011	$50.350	12/01/2011	$51.600					

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27
Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

Issue Date: 03/17/2010 **Wage Request Number:** 20100316-043 **Page 1 of 10**

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

JOANNE F. GOLDSTEIN
Secretary of Labor and Workforce Development

GEORGE E. NOEL
Director of Labor

LAURA M. MARLIN
Commissioner of Division of Occupational Safety

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

Awarding Authority: City of Newton

Contract Number: 10-51 **City/Town:** NEWTON

Description of Work: Rebid - Replacement of the Emergency Generator at Peirce Elementary School

Job Location: 170 Temple Street, West Newton

Classification	Effective Dates and Total Rates					
CAISSON & UNDERPINNING TOP MAN	12.01/2009	$47.100	06.01/2010	$48.100	12.01/2010	$49.350
	06.01/2011	$50.350	12.01/2011	$51.600		
CARBIDE CORE DRILL OPERATOR	12.01/2009	$47.350	06.01/2010	$48.350	12.01/2010	$49.600
	06.01/2011	$50.600	12.01/2011	$51.850		
CARPENTER	03.01/2010	$54.500	09.01/2010	$55.380	03.01/2011	$56.250
	09.01/2011	$57.380	03.01/2012	$58.500		
APPRENTICE: CARPENTER - Zone 2 Eastern MA						
Ratio Step 1 2 3 4 5 6 7 8						
1:5 % 50.00 60.00 70.00 75.00 80.00 80.00 90.00 90.00						
Apprentice wages shall be no less than the following:						
Step 1 $23.24/2 $28.43/3 $40.29/4 $41.87/5 $45.03/6 $45.03/7 $51.35/8 $51.35						
CEMENT MASONRY/PLASTERING	02.01/2010	$66.200	08.01/2010	$67.670	02.01/2011	$68.440
	08.01/2011	$70.060	02.01/2012	$70.830		
CHAIN SAW OPERATOR	12.01/2009	$47.350	06.01/2010	$48.350	12.01/2010	$49.600
	06.01/2011	$50.600	12.01/2011	$51.850		
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	12.01/2009	$59.530	06.01/2010	$60.780	12.01/2010	$62.030
COMPRESSOR OPERATOR	12.01/2009	$47.890	06.01/2010	$48.810	12.01/2010	$49.740
DELEADER (BRIDGE)	01.01/2010	$63.410				
DEMO: ADZEMAN	12.01/2009	$47.100	06.01/2010	$48.100	12.01/2010	$49.350
	06.01/2011	$50.350	12.01/2011	$51.600		
DEMO: BACKHOE/LOADER/HAMMER OPERATOR	12.01/2009	$48.100	06.01/2010	$49.100	12.01/2010	$50.350
	06.01/2011	$51.350	12.01/2011	$52.600		
DEMO: BURNERS	12.01/2009	$47.850	06.01/2010	$48.850	12.01/2010	$50.100
	06.01/2011	$51.100	12.01/2011	$52.350		
DEMO: CONCRETE CUTTER/SAWYER	12.01/2009	$48.100	06.01/2010	$49.100	12.01/2010	$50.350
	06.01/2011	$51.350	12.01/2011	$52.600		
DEMO: JACKHAMMER OPERATOR	12.01/2009	$47.850	06.01/2010	$48.850	12.01/2010	$50.100
	06.01/2011	$51.100	12.01/2011	$52.350		
DEMO: WRECKING LABORER	12.01/2009	$47.100	06.01/2010	$48.100	12.01/2010	$49.350
	06.01/2011	$50.350	12.01/2011	$51.600		
DIRECTIONAL DRILL MACHINE OPERATOR	12.01/2009	$58.190	06.01/2010	$59.430	12.01/2010	$60.680
DIVER	08.01/2009	$75.090	08.01/2010	$77.440	08.01/2011	$80.190
DIVER TENDER	08.01/2009	$60.220	08.01/2010	$62.570	08.01/2011	$65.320
DIVER TENDER (EFFLUENT)	08.01/2009	$78.810	08.01/2010	$82.330	08.01/2011	$86.460
DIVER/SLURRY (EFFLUENT)	08.01/2009	$101.110	08.01/2010	$104.640	08.01/2011	$108.760
ELECTRICIAN	03.01/2010	$65.790	09.01/2010	$67.030	03.01/2011	$68.270

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27
Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

Issue Date: 03/17/2010 **Wage Request Number:** 20100316-043 **Page 2 of 10**

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

JOANNE F. GOLDSTEIN
Secretary of Labor and Workforce Development

GEORGE E. NOEL
Director of Labor

LAURA M. MARLIN
Commissioner of Division of Occupational Safety

Awarding Authority: City of Newton

Contract Number: 10-51 **City/Town:** NEWTON

Description of Work: Rebid - Replacement of the Emergency Generator at Peirce Elementary School

Job Location: 170 Temple Street, West Newton

Classification	Effective Dates and Total Rates					
APPRENTICE: ELECTRICIAN - Local 103						
Ratio Step 1 2 3 4 5 6 7 8 9 10						
2:3 *** % 40.00 40.00 45.00 45.00 50.00 55.00 60.00 65.00 70.00 75.00						
Apprentice wages shall be no less than the following Steps: App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80						
1$40.80/2$40.80/3$48.17/4$48.17/5$50.23/6$52.29/7$54.34/8$54.42/9$58.48/10$60.55						
ELEVATOR CONSTRUCTOR	01/01/2010	$65.190	01/01/2011	$66.690	01/01/2012	$68.190
APPRENTICE: ELEVATOR CONSTRUCTOR - Local 4						
Ratio Step 1 2 3 4 5						
1:1 % 50.00 55.00 65.00 70.00 80.00						
Apprentice rates shall be no less than the following: Step 1-2 are 6 mos.; Step 3-5 are 1 year						
Step 1$44.47/2$46.89/3$51.75/4$54.17/5$58.99						
ELEVATOR CONSTRUCTOR HELPER	01/01/2010	$51.330	01/01/2011	$52.830	01/01/2012	$54.330
FENCE & GUARD RAIL ERECTOR	12/01/2009	$47.350	06/01/2010	$48.350	12/01/2010	$49.600
	06/01/2011	$50.600	12/01/2011	$51.850		
FIELD ENG. - INST. PERSON (BLDG, SITE, HVY CONST)	11/01/2009	$55.850	05/01/2010	$56.950	11/01/2010	$58.190
	05/01/2011	$59.430				
FIELD ENG. - ROD PERSON (BLDG, SITE, HVY CONST)	11/01/2009	$40.870	05/01/2010	$41.520	11/01/2010	$42.250
	05/01/2011	$42.980				
FIELD ENG.-CHIEF OF PARTY (BLDG, SITE, HVY CONST)	11/01/2009	$57.210	05/01/2010	$58.320	11/01/2010	$59.570
	05/01/2011	$60.820				
FIRE ALARM INSTALLER	03/01/2010	$65.790	09/01/2010	$67.030	03/01/2011	$68.270
FIRE ALARM REPAIR / MAINTENANCE	03/01/2010	$53.800	09/01/2010	$54.730	03/01/2011	$55.660
FIREMAN (ASST. ENGINEER)	12/01/2009	$52.740	06/01/2010	$53.810	12/01/2010	$54.890
FLAGGER & SIGNALER	12/01/2009	$36.300	06/01/2010	$37.300	12/01/2010	$37.300
	06/01/2011	$38.300	12/01/2011	$38.300		
FLOORCOVERER	03/01/2010	$59.630	09/01/2010	$60.380	03/01/2011	$61.130
	09/01/2011	$62.380	03/01/2012	$63.630		
APPRENTICE: FLOORCOVERER - Local 2168 Zone I						
Ratio Step 1 2 3 4 5 6 7 8						
1:1 % 50.00 55.00 60.00 65.00 70.00 75.00 80.00 85.00						
Apprentice rates shall be no less than the following: Steps are 750 hrs.						
Step 1$27.35/2$29.13/3$39.95/4$41.71/5$45.32/6$47.10/7$50.69/8$52.47						
FORK LIFT/CHERRY PICKER	12/01/2009	$58.530	06/01/2010	$59.780	12/01/2010	$61.030
GENERATOR/LIGHTING PLANT/HEATERS	12/01/2009	$47.890	06/01/2010	$48.810	12/01/2010	$49.740
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)	01/01/2010	$52.910				

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27
Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

Issue Date: 03/17/2010 **Wage Request Number:** 20100316-043 **Page 3 of 10**

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

Awarding Authority: City of Newton

Contract Number: 10-51 **City/Town:** NEWTON

Description of Work: Rebid - Replacement of the Emergency Generator at Peirce Elementary School

Job Location: 170 Temple Street, West Newton

Classification	Effective Dates and Total Rates					
APPRENTICE: GLAZIER - Local 35 Zone 2						
Ratio / Step / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8						
1:1 / % / 50.00 / 55.00 / 60.00 / 65.00 / 70.00 / 75.00 / 80.00 / 90.00						
Apprentice wages shall be no less than the following: Steps are 730 hrs.						
Step 1 $23.84/$28.43/$30.31/$32.18/$41.24/$43.13/$45.01/$48.74						
HOISTING ENGINEER/CRANES/GRADALLS	12/01/2009	$58.530	06/01/2010	$59.780	12/01/2010	$61.030
APPRENTICE: HOIST/FORT. ENG - Local 4						
Ratio / Step / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8						
1:4 / % / 55.00 / 60.00 / 65.00 / 70.00 / 75.00 / 80.00 / 85.00 / 90.00						
Apprentice wages shall be no less than the following:						
Step 1 $29.83/$43.42/$45.31/$47.20/$49.09/$50.97/$52.84/$54.74						
HVAC (DUCTWORK)	02/01/2010	$63.470	08/01/2010	$64.720	02/01/2011	$65.970
	08/01/2011	$67.220	02/01/2012	$68.470	08/01/2012	$69.720
	02/01/2013	$70.970				
HVAC (ELECTRICAL CONTROLS)	03/01/2010	$65.790	09/01/2010	$67.030	03/01/2011	$68.270
HVAC (TESTING AND BALANCING - AIR)	02/01/2010	$63.470	08/01/2010	$64.720	02/01/2011	$65.970
	08/01/2011	$67.220	02/01/2012	$68.470	08/01/2012	$69.720
	02/01/2013	$70.970				
HVAC (TESTING AND BALANCING - WATER)	03/01/2010	$68.730				
HVAC MECHANIC	03/01/2010	$68.730				
HYDRAULIC DRILLS	12/01/2009	$47.850	06/01/2010	$48.850	12/01/2010	$50.100
	06/01/2011	$51.100	12/01/2011	$52.350		
INSULATOR (PIPES & TANKS)	09/01/2009	$59.260	09/01/2010	$61.660		
APPRENTICE: ASBESTOS INSULATOR (Pipe & Tanks) - Local 6 Boston						
Ratio / Step / 1 / 2 / 3 / 4						
1:1 / % / 50.00 / 60.00 / 70.00 / 80.00						
Apprentice wages shall be no less than the following: Steps are 1 year						
Step 1 $36.64/$41.16/$45.69/$50.21						
IRONWORKER/WELDER	03/16/2010	$60.940				
APPRENTICE: IRONWORKER - Local 7 Boston						
Ratio / Step / 1 / 2 / 3 / 4 / 5 / 6						
** / % / 60.00 / 70.00 / 75.00 / 80.00 / 85.00 / 90.00						
Apprentice wages shall be no less than the following: ** Structural 1:6; Ornamental 1:4						
Step 1 $46.82/$50.35/$52.12/$53.88/$55.65/$57.41						
JACKHAMMER & PAVING BREAKER OPERATOR	12/01/2009	$47.350	06/01/2010	$48.350	12/01/2010	$49.600
	06/01/2011	$50.600	12/01/2011	$51.850		
LABORER	12/01/2009	$47.100	06/01/2010	$48.100	12/01/2010	$49.350
	06/01/2011	$50.350	12/01/2011	$51.600		

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27
Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

Issue Date: 03/17/2010 **Wage Request Number:** 20100316-043 **Page 4 of 10**

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

JOANNE F. GOLDSTEIN
Secretary of Labor and Workforce Development

GEORGE E. NOEL
Director of Labor

LAURA M. MARLIN
Commissioner of Division of Occupational Safety

Awarding Authority: City of Newton

Contract Number: 10-51 **City/Town:** NEWTON

Description of Work: Rebid - Replacement of the Emergency Generator at Peirce Elementary School

Job Location: 170 Temple Street, West Newton

Classification	Effective Dates and Total Rates					
APPRENTICE: LABORER - Zone 1						
Ratio Step 1 2 3 4						
1:3 % 60.00 70.00 80.00 90.00						
Apprentice wages shall be no less than the following:						
Step 1 $534.88/$539.81/$542.74/$543.67						
LABORER: CARPENTER TENDER	12/01/2009	$47.100	06/01/2010	$48.100	12/01/2010	$49.350
	06/01/2011	$50.350	12/01/2011	$51.600		
LABORER: CEMENT FINISHER TENDER	12/01/2009	$47.100	06/01/2010	$48.100	12/01/2010	$49.350
	06/01/2011	$50.350	12/01/2011	$51.600		
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER	12/01/2009	$47.100	06/01/2010	$48.100	12/01/2010	$49.350
	06/01/2011	$50.350	12/01/2011	$51.600		
LABORER: MASON TENDER	12/01/2009	$47.350	06/01/2010	$48.350	12/01/2010	$49.600
	06/01/2011	$50.600	12/01/2011	$51.850		
LABORER: MULTI-TRADE TENDER	12/01/2009	$47.100	06/01/2010	$48.100	12/01/2010	$49.350
	06/01/2011	$50.350	12/01/2011	$51.600		
LABORER: TREE REMOVER	12/01/2009	$47.100	06/01/2010	$48.100	12/01/2010	$49.350
	06/01/2011	$50.350	12/01/2011	$51.600		
This classification applies to the wholesale removal of standing trees including all associated trimming of branches and limbs, and applies to the removal of branches at locations not on or around utility lines.						
LASER BEAM OPERATOR	12/01/2009	$47.350	06/01/2010	$48.350	12/01/2010	$49.600
	06/01/2011	$50.600	12/01/2011	$51.850		
MARBLE & TILE FINISHERS	02/01/2010	$56.950	08/01/2010	$58.470	02/01/2011	$59.270
	08/01/2011	$60.950	02/01/2012	$61.740		
APPRENTICE: MARBLE-TILE-TERRAZZO FINISHER - Local 3 Marble & Tile						
Ratio Step 1 2 3 4 5						
1:3 % 50.00 60.00 70.00 80.00 90.00						
Apprentice wages shall be no less than the following: Steps are 800 hrs.						
Step 1 $539.66/$543.11/$544.57/$550.03/$553.49						
MARBLE MASONS,TILELAYERS & TERRAZZO MECH	02/01/2010	$68.050	08/01/2010	$69.950	02/01/2011	$70.940
	08/01/2011	$73.040	02/01/2012	$74.030		
APPRENTICE: MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile						
Ratio Step 1 2 3 4 5						
1:3 % 50.00 60.00 70.00 80.00 90.00						
Apprentice wages shall be no less than the following:						
Step 1 $543.73/$550.19/$554.66/$559.12/$563.59						
MECH. SWEEPER OPERATOR (NON-CONSTRUCTION)	07/01/2009	$28.300	07/01/2010	$29.000	07/01/2011	$29.700
MECH. SWEEPER OPERATOR (ON CONST. SITES)	12/01/2009	$58.190	06/01/2010	$59.430	12/01/2010	$60.680
MECHANICS MAINTENANCE	12/01/2009	$58.190	06/01/2010	$59.430	12/01/2010	$60.680
MILLWRIGHT (Zone 1)	03/01/2009	$54.400				

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27
Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

JOANNE F. GOLDSTEIN
Secretary of Labor and Workforce Development

GEORGE E. NOEL
Director of Labor

LAURA M. MARLIN
Commissioner of Division of Occupational Safety

Awarding Authority: City of Newton

Contract Number: 10-51 **City/Town:** NEWTON

Description of Work: Rebid - Replacement of the Emergency Generator at Peirce Elementary School

Job Location: 170 Temple Street, West Newton

Classification	Effective Dates and Total Rates					
APPRENTICE: MILLWRIGHT - Local 1121 Zone 1						
Ratio / Step / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8						
1:1 / % / 50.00 / 55.00 / 60.00 / 65.00 / 70.00 / 75.00 / 80.00 / 85.00						
Apprentice wages shall be no less than the following:						
Step 1 $34.63/2 $34.31/3 $39.44/4 $41.12/5 $44.24/6 $45.94/7 $47.63/8 $49.32						
MORTAR MIXER	12/01/2009	$47.350	06/01/2010	$48.350	12/01/2010	$49.600
	06/01/2011	$50.600	12/01/2011	$51.850		
OILER (OTHER THAN TRUCK CRANES,GRADALLS)	12/01/2009	$41.750	06/01/2010	$42.480	12/01/2010	$43.220
OILER (TRUCK CRANES, GRADALLS)	12/01/2009	$44.720	06/01/2010	$45.550	12/01/2010	$46.380
OTHER POWER DRIVEN EQUIPMENT - CLASS II	12/01/2009	$58.190	06/01/2010	$59.430	12/01/2010	$60.680
PAINTER (BRIDGES/TANKS)	01/01/2010	$63.410				
APPRENTICE: PAINTER Local 35 - BRIDGES/TANKS						
Ratio / Step / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8						
1:1 / % / 50.00 / 55.00 / 60.00 / 65.00 / 70.00 / 75.00 / 80.00 / 90.00						
Apprentice wages shall be no less than the following: Steps are 750 hrs.						
Step 1 $29.31/2 $34.43/3 $34.85/4 $39.27/5 $48.89/6 $51.31/7 $53.73/8 $58.57						
PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2010	$54.310				
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.						
APPRENTICE: PAINTER Local 35 Zone 2 - Spray/Sandblast - New						
Ratio / Step / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8						
1:1 / % / 50.00 / 55.00 / 60.00 / 65.00 / 70.00 / 75.00 / 80.00 / 90.00						
Apprentice wages shall be no less than the following:						
Step 1 $24.74/2 $31.85/3 $33.55/4 $32.24/5 $44.14/6 $45.83/7 $47.53/8 $50.92						
PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2010	$52.370				
APPRENTICE: PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint						
Ratio / Step / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8						
1:1 / % / 50.00 / 55.00 / 60.00 / 65.00 / 70.00 / 75.00 / 80.00 / 90.00						
Apprentice wages shall be no less than the following:						
Step 1 $23.79/2 $30.78/3 $32.38/4 $33.98/5 $42.78/6 $44.38/7 $45.98/8 $49.17						
PAINTER (TRAFFIC MARKINGS)	12/01/2009	$47.100	06/01/2010	$48.100	12/01/2010	$49.350
	06/01/2011	$50.350	12/01/2011	$51.600		
PAINTER / TAPER (BRUSH, NEW) *	01/01/2010	$52.910				
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used.						
APPRENTICE: PAINTER - Local 35 Zone 2 - BRUSH NEW						
Ratio / Step / 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8						
1:1 / % / 50.00 / 55.00 / 60.00 / 65.00 / 70.00 / 75.00 / 80.00 / 90.00						
Apprentice wages shall be no less than the following: Steps are 750 hrs.						
Step 1 $23.84/2 $28.43/3 $30.31/4 $32.18/5 $41.24/6 $43.13/7 $45.01/8 $48.74						

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27
Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

Issue Date: 03/17/2010 **Wage Request Number:** 20100316-043 **Page 6 of 10**

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

JOANNE F. GOLDSTEIN
Secretary of Labor and Workforce Development

GEORGE E. NOEL
Director of Labor

LAURA M. MARLIN
Commissioner of Division of Occupational Safety

Awarding Authority: City of Newton

Contract Number: 10-51 **City/Town:** NEWTON

Description of Work: Rebid - Replacement of the Emergency Generator at Peirce Elementary School

Job Location: 170 Temple Street, West Newton

Classification	Effective Dates and Total Rates					
PAINTER / TAPER (BRUSH, REPAINT)	01/01/2010	$50.970				
APPRENTICE: PAINTER. Local 35 Zone 2 - BRUSH REPAINT						
Ratio Step 1 2 3 4 5 6 7 8						
1:1 % 50.00 55.00 60.00 65.00 70.00 75.00 80.00 90.00						
Apprentice wages shall be no less than the following: Steps are 750 hrs.						
Step 1 $22.89/$25 27.34/$529.14/$530.92/$539.90/$541.68/$543.44/$847.01						
PANEL & PICKUP TRUCKS DRIVER	12/01/2009	$44.160	06/01/2010	$44.760	12/01/2010	$45.360
	06/01/2011	$46.110	12/01/2011	$46.770	06/01/2012	$47.420
	12/01/2012	$48.450				
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK)	08/01/2009	$60.220	08/01/2010	$62.570	08/01/2011	$65.320
PILE DRIVER	08/01/2009	$60.220	08/01/2010	$62.570	08/01/2011	$65.320
APPRENTICE: PILE DRIVER - Local 56 Zone 1						
Ratio Step 1 2 3 4 5 6 7 8						
1:3 % 60.00 65.00 70.00 75.00 80.00 85.00 90.00 95.00						
Apprentice wages shall be no less than the following:						
Step 1 $45.33/$547.21/$549.07/$550.93/$552.79/$554.64/$856.50/$858.36						
PIPEFITTER & STEAMFITTER	03/01/2010	$68.730				
APPRENTICE: PIPEFITTER. - Local 537						
Ratio Step 1 2 3 4 5						
** % 40.00 45.00 60.00 70.00 80.00						
Apprentice Rate - Step 1 $33.94/$543.38/$550.29/$554.90/$559.51	**1:3; 3:13; 1:10 thereafter / Steps are 1 yr.					
Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)						
PIPELAYER	12/01/2009	$47.350	06/01/2010	$48.350	12/01/2010	$49.600
	06/01/2011	$50.600	12/01/2011	$51.850		
PLUMBERS & GASFITTERS	03/01/2010	$67.500				
APPRENTICE: PLUMBER. - Local 12						
Ratio Step 1 2 3 4 5						
** % 35.00 40.00 55.00 65.00 75.00						
Apprentice wages shall be no less than the following:	**1:2; 2:4; 3:10; 4:14; 5:19/Steps are 1 yr					
Step 1 $30.03/$532.90/$541.57/$547.32/4-wdlic$50.20/$553.07/5-wdlic$55.98						
PNEUMATIC CONTROLS (TEMP.)	03/01/2010	$68.730				
PNEUMATIC DRILL/TOOL OPERATOR	12/01/2009	$47.350	06/01/2010	$48.350	12/01/2010	$49.600
	06/01/2011	$50.600	12/01/2011	$51.850		
POWDERMAN & BLASTER	12/01/2009	$48.100	06/01/2010	$49.100	12/01/2010	$50.350
	06/01/2011	$51.350	12/01/2011	$52.600		
POWER SHOVEL/DERRICK/TRENCHING MACHINE	12/01/2009	$58.530	06/01/2010	$59.780	12/01/2010	$61.030
PUMP OPERATOR (CONCRETE)	12/01/2009	$58.530	06/01/2010	$59.780	12/01/2010	$61.030
PUMP OPERATOR (DEWATERING, OTHER)	12/01/2009	$47.890	06/01/2010	$48.810	12/01/2010	$49.740
READY-MIX CONCRETE DRIVER	05/01/2009	$40.520	05/01/2010	$41.080	05/01/2011	$41.690

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27
Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

Issue Date: 03/17/2010 **Wage Request Number:** 20100316-043 **Page 7 of 10**

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

JOANNE F. GOLDSTEIN
Secretary of Labor and Workforce Development

GEORGE E. NOEL
Director of Labor

LAURA M. MARLIN
Commissioner of Division of Occupational Safety

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

Awarding Authority: City of Newton

Contract Number: 10-51 **City/Town:** NEWTON

Description of Work: Rebid - Replacement of the Emergency Generator at Peirce Elementary School

Job Location: 170 Temple Street, West Newton

Classification	Effective Dates and Total Rates					
RECLAIMERS	12/01/2009	$58.190	06/01/2010	$59.430	12/01/2010	$60.680
RESIDENTIAL WOOD FRAME CARPENTER **	04/01/2009	$35.620				

** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement.
As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.

APPRENTICE: CARPENTER (Residential Wood Frame) - Zone 2

Ratio	Step	1	2	3	4	5	6	7	8
1:5	%	40.00	40.00	45.00	70.00	75.00	80.00	85.00	90.00

Apprentice wages shall be no less than the following:

Step 1 $20.13/2 $24.04/3 $27.23/4 $28.43/5 $29.63/6 $30.83/7 $32.03/8 $33.22

RIDE-ON MOTORIZED BUGGY OPERATOR	12/01/2009	$47.350	06/01/2010 $48.350 12/01/2010 $49.600
	06/01/2011	$50.600	12/01/2011 $51.850
ROLLER/SPREADER/MULCHING MACHINE	12/01/2009	$58.190	06/01/2010 $59.430 12/01/2010 $60.680
ROOFER (Inc Roofer Waterproofing & Roofer Damproofg)	02/01/2009	$53.860	

APPRENTICE: ROOFER - Local 33

Ratio	Step	1	2	3	4	5
**	%	50.00	60.00	65.00	75.00	85.00

** 1:5, 2:6-10, the 1:10; Rano fing: 1:4, then 1:1

Step 1 is 2000 hrs; Steps 2-5 are 1000 hrs.

Apprentice rate: no less than: Step 1 $34.48/2 $40.84/3 $42.58/4 $44.02/5 $49.50

SHEETMETAL WORKER	02/01/2010	$63.470	08/01/2010 $64.720 02/01/2011 $65.970
	08/01/2011	$67.220	02/01/2012 $68.470 08/01/2012 $69.720
	02/01/2013	$70.970	

APPRENTICE: SHEET METAL WORKER - Local 17-A

Ratio	Step	1	2	3	4	5	6	7
1:4	%	40.00	45.00	50.00	60.00	65.00	75.00	85.00

Apprentice wages shall be no less than the following:

Steps 1-3 are 1 year; Steps 4-7 are 6 mos.

Step 1 $00.00/2 $24.51/3 $35.34/4 $37.38/5 $44.40/6 $55.43

SIGN ERECTOR	06/01/2009	$37.780	

APPRENTICE: SIGN ERECTOR - Local 33 Zone 2

Ratio	Step	1	2	3	4	5	6	7	8	9
1:1	%	50.00	55.00	60.00	65.00	70.00	75.00	80.00	85.00	90.00

Steps are 4 mos.

SLATE/TILE/PRECAST CONCRETE ROOFER	02/01/2009	$54.110	
SPECIALIZED EARTH MOVING EQUIP < 35 TONS	12/01/2009	$44.620	06/01/2010 $45.220 12/01/2010 $45.820
	06/01/2011	$46.570	12/01/2011 $47.230 06/01/2012 $47.880
	12/01/2012	$48.910	

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27
Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

JOANNE F. GOLDSTEIN
Secretary of Labor and Workforce Development

GEORGE E. NOEL
Director of Labor

LAURA M. MARLIN
Commissioner of Division of Occupational Safety

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

Awarding Authority: City of Newton

Contract Number: 10-51 **City/Town:** NEWTON

Description of Work: Rebid - Replacement of the Emergency Generator at Peirce Elementary School

Job Location: 170 Temple Street, West Newton

Classification	Effective Dates and Total Rates					
SPECIALIZED EARTH MOVING EQUIP > 35 TONS	12/01/2009	$44.910	06/01/2010	$45.510	12/01/2010	$46.110
	06/01/2011	$46.860	12/01/2011	$47.520	06/01/2012	$48.170
	12/01/2012	$49.200				
SPRINKLER FITTER	03/16/2010	$69.700				

APPRENTICE: SPRINKLER FITTER - Local 550

Ratio	Step	1	2	3	4	5	6	7	8	9	10
1:1	%	40.00	45.00	50.00	55.00	60.00	65.00	70.00	75.00	80.00	85.00

Apprentice wages shall be no less than the following steps:

1$35.04/2$37.82/3$40.60/4$43.38/5$44.61/6$48.94/7$51.72/8$54.50/9$57.28/10$60.06

STEAM BOILER OPERATOR	12/01/2009	$58.190	06/01/2010	$59.430	12/01/2010	$60.680
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	12/01/2009	$58.190	06/01/2010	$59.430	12/01/2010	$60.680
TELECOMMUNICATION TECHNICIAN	03/01/2010	$53.800	09/01/2010	$54.730	03/01/2011	$55.660

APPRENTICE: TELECOMMUNICATION TECHNICIAN - Local 103

Ratio	Step	1	2	3	4	5	6	7	8
1:1	%	40.00	45.00	50.00	55.00	60.00	65.00	75.00	80.00

Apprentice wages shall be no less than the following:

Step 1$34.59/2$34.14/3$37.70/4$39.25/5$40.80/6$42.35/7$45.45/8$47.00

TERRAZZO FINISHERS	02/01/2010	$66.950	08/01/2010	$68.850	02/01/2011	$69.840
	08/01/2011	$71.940	02/01/2012	$72.930		

APPRENTICE: TERRAZZO FINISHER - Local 3 Marble & Tile

Ratio	Step	1	2	3	4	5
1:3	%	50.00	60.00	70.00	80.00	90.00

Apprentice wages shall be no less than the following: Steps are 800 hrs.

Step 1$45.18/2$49.33/3$53.89/4$58.24/5$62.40

TEST BORING DRILLER	12/01/2009	$48.500	06/01/2010	$49.500	12/01/2010	$50.750
	06/01/2011	$51.750	12/01/2011	$53.000		
TEST BORING DRILLER HELPER	12/01/2009	$47.220	06/01/2010	$48.220	12/01/2010	$49.470
	06/01/2011	$50.470	12/01/2011	$51.720		
TEST BORING LABORER	12/01/2009	$47.100	06/01/2010	$48.100	12/01/2010	$49.350
	06/01/2011	$50.350	12/01/2011	$51.600		
TRACTORS/PORTABLE STEAM GENERATORS	12/01/2009	$58.190	06/01/2010	$59.430	12/01/2010	$60.680
TRAILERS FOR EARTH MOVING EQUIPMENT	12/01/2009	$45.200	06/01/2010	$45.800	12/01/2010	$46.400
	06/01/2011	$47.150	12/01/2011	$47.810	06/01/2012	$48.460
	12/01/2012	$49.490				
TUNNEL WORK - COMPRESSED AIR	12/01/2009	$59.430	06/01/2010	$60.680	12/01/2010	$61.930
	06/01/2011	$63.180	12/01/2011	$64.430		
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE)	12/01/2009	$61.430	06/01/2010	$62.680	12/01/2010	$63.930
	06/01/2011	$65.180	12/01/2011	$66.430		
TUNNEL WORK - FREE AIR	12/01/2009	$51.500	06/01/2010	$52.750	12/01/2010	$54.000
	06/01/2011	$55.250	12/01/2011	$56.500		

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27
Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

Issue Date: 03/17/2010 **Wage Request Number:** 20100316-043 **Page 9 of 10**

DEVAL L. PATRICK
Governor

TIMOTHY P. MURRAY
Lieutenant Governor

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DIVISION OF OCCUPATIONAL SAFETY

Prevailing Wage Rates

As determined by the Commissioner under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

JOANNE F. GOLDSTEIN
Secretary of Labor and Workforce Development

GEORGE E. NOEL
Director of Labor

LAURA M. MARLIN
Commissioner of Division of Occupational Safety

Awarding Authority: City of Newton

Contract Number: 10-51 **City/Town:** NEWTON

Description of Work: Rebid - Replacement of the Emergency Generator at Peirce Elementary School

Job Location: 170 Temple Street, West Newton

Classification	Effective Dates and Total Rates					
TUNNEL WORK - FREE AIR (HAZ. WASTE)	12/01/2009	$53.500	06/01/2010	$54.750	12/01/2010	$56.000
	06/01/2011	$57.250	12/01/2011	$58.500		
VAC-HAUL	12/01/2009	$44.620	06/01/2010	$45.220	12/01/2010	$45.820
	06/01/2011	$46.570	12/01/2011	$47.230	06/01/2012	$47.880
	12/01/2012	$48.910				
WAGON DRILL OPERATOR	12/01/2009	$47.350	06/01/2010	$48.350	12/01/2010	$49.600
	06/01/2011	$50.600	12/01/2011	$51.850		
WASTE WATER PUMP OPERATOR	12/01/2009	$58.530	06/01/2010	$59.780	12/01/2010	$61.030
WATER METER INSTALLER	03/01/2010	$67.500				

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours) unless otherwise specified.

* Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof.
** Multiple ratios are listed in the comment field.
*** The job site ratio of 2 apprentices (APP) for every 3 journeymen (JM) is allowed as follows:
1 JM: 1 APP; 2-3 JM: 2 APP; 4-6 JM: 4 APP; 7-9 JM: 6 APP; 10-12 JM: 8 APP; 13-15 JM: 10 APP; etc.
**** The job site ratio of 2 apprentices (APP) for every 3 journeymen (JM) is allowed as follows:

This wage schedule must be posted at the work site in accordance with M.G.L. ch. 149, sec. 27
Failure of the employer to pay "prevailing wage rates," which are the minimum wage rates listed above, on public works projects is a violation of M.G.L. ch. 149, sec. 27. Employees not receiving such rates should report the violation to the Office of Fair Labor and Business Practices, 100 Cambridge Street, Boston, MA 02108; Tel: 617-727-3465.

Issue Date: 03/17/2010 **Wage Request Number:** 20100316-043 **Page 10 of 10**

The Massachusetts Prevailing Wage Law
M.G.L. ch. 149, §§ 26 – 27

NOTICE TO AWARDING AUTHORITIES

- 'The enclosed wage schedule applies only to the specific project listed at the top and will be updated for any public construction project lasting longer than one (1) year.
- 'You should request an updated wage schedule from the Division of Occupational Safety if you have not opened bids or selected a contractor within 90 days of the date of issuance of the enclosed wage schedule.
- 'The wage schedule shall be incorporated in any advertisement or call for bids for the project for which it has been issued.
- 'Once a contractor has been selected by the awarding authority, the wage schedule shall be made a part of the contract for that project.

NOTICE TO CONTRACTORS

- The enclosed wage schedule, and any updated schedule, must be posted in a conspicuous place at the work site during the life of the project.
- The wages listed on the enclosed wage schedule must be paid to employees on public works projects regardless of whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- The enclosed wage schedule applies to all phases of the project including the final clean-up. Contractors whose only role is to perform final clean-up must pay their employees according to this wage schedule.
- All apprentices must be registered with the Massachusetts Division of Apprentice Training in order to be paid at the reduced apprentice rates. If a worker is not registered with the Division of Apprentice Training, they must be paid the “total rate” listed on the wage schedule regardless of experience or skill level. For further information, please call (617) 727-3486 or write to the Division of Apprentice Training, 399 Washington Street, 4th Floor, Boston, MA 02108

WEEKLY PAYROLL RECORDS REPORT
& STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form has been printed on the reverse of this page and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

In addition, every contractor and subcontractor is required to submit a copy of their weekly payroll records to the awarding authority. This is required to be done on a weekly basis. Once collected, the awarding authority is also required to preserve those records for three years.

In addition, each such contractor, subcontractor or public body shall furnish to the Department of Labor & Workforce Development/Division of Occupational Safety within fifteen days after completion of its portion of the work a statement, executed by the contractor, subcontractor or public body who supervises the payment of wages, in the following form:

STATEMENT OF COMPLIANCE

_____, 2010_____

I,_____,_____
(Name of signatory party) (Title)
do hereby state:
That I pay or supervise the payment of the persons employed by
_____ on the _____
(Contractor, subcontractor or public body) (Building or project)
and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature _____

Title _____

DIVISION OF OCCUPATIONAL SAFETY, 399 WASHINGTON STREET, 5TH FL., BOSTON, MA. 02108

WEEKLY PAYROLL REPORT FORM

Company Name:

Project Name:

Awarding Auth.:

Work Week Ending:

Prime Contractor

Subcontractor
List Prime Contractor:

Employer Signature:

Print Name & Title:

Employee Name & Address	Work Classification	Hours Worked							(A) Tot. Hrs.	(B) Hourly Base Wage	Employer Contributions			(F) [B+C+D+E] Hourly Total Wage (prev. wage)	(G) [A*F] Weekly Total Amount
											(C) Health & Welfare	(D) Pension	(E) Supp. Unemp.		
		S	M	T	W	T	F	S							

NOTE: Every contractor and subcontractor is required to submit a copy of their weekly payroll records to the awarding authority.

TABLE OF CONTENTS

EMERGENCY GENERATOR REPLACEMENT
AT PEIRCE ELEMENTARY SCHOOL

PLANS MUST BE OBTAINED THROUGH THE PURCHASING DEPT.

DIVISION 1

SECTION 01010

SUMMARY OF WORK

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division 1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

1.2 SCOPE OF WORK

A. The Work under the Contract consists of:

1. Demolition, removal and disposal of specified abandoned equipment located in the boiler room of the Peirce School to provide physical space to permit the new emergency generator to be tied into the existing building electrical feed.

2. Providing a new diesel-powered emergency generator, located at the edge of the playground; the generator will be set on a suitable concrete pad and enclosed within a lockable fence as specified.

3. Power wiring will be run within a trench excavated along the side of the existing asphalt driveway, across the driveway, through the foundation and into the boiler room to connect, through suitable switchgear, to the building power feed.

4. Excavations are to be backfilled and compacted; disturbed paving shall be restored.

5. After patching, sealcoat the entire driveway.

B. In addition, the Work under the Contract includes:

1. Work outside the Project Site as called for in the Contract Documents and as required for the performance of the Work.

2. The restoration of any items damaged or destroyed by encroaching upon areas outside the Project Site.

1.3 TIME OF COMPLETION

A. In accordance with Paragraph 25 of the General Conditions, the Work shall start as stated in the Notice to Proceed and shall be complete within 53 consecutive calendar days, but not later than August 31, 2010.

1.4 WORK UNDER SEPARATE CONTRACT

A. Coordination by Owner

1. The Owner shall make the site available as required by the contractor, subject to previously scheduled events that cannot be rescheduled.

B. Coordination by Contractor

1. The contractor shall be responsible for coordinating the efforts of his/her subcontractors, as well as ensuring site accessibility from the Owner.

END OF SECTION

SECTION 01020

SCHEDULING AND PHASING

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division 1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

1.2 SCOPE OF WORK

A. Furnish and install all work as indicated on the Drawings and in the Specification according to the phasing and sequencing described herein. Coordinate the Work of other trades under these conditions.

B. Provide fully coordinated scheduling services for the project to assure completion of the work within the time allowed by contract, and under the conditions described in this section.

C. Be responsible for incorporating subcontractor activities into overall schedule and for enforcing approved schedule progress.

D. Revise the construction schedule from time to time as needed to achieve production rates that will result in on-time completion.

E. Provide additional staffing, request extended work hours or adjust sequencing if necessary to complete the project as required by these documents.

1.3 DEFINITIONS

A. Scheduling requirements of this section refer to various scope items. The following definitions shall be used when interpreting these requirements.

B. “Generator work” – refers generally to all work related to the siting of the generator at the edge of the playground.

C. “Electrical work – refers generally to the tasks necessary to electrically connect the emergency generator to the building feeds.

D. “Site work” – refers generally to the earthwork required to construct a suitable foundation for the generator, trenching, backfilling and patching.

1.4 GENERAL SCHEDULING REQUIREMENTS

A. This Section specifies administrative and procedural requirements for scheduling and phasing the work of this contract.

B. The site is a public grammar school. As such, events relating to school activities, previously scheduled, may interfere with the work of this contractor.

C. While every effort will be made to accommodate and not delay the work described herein, there may be occurrences that require that the contractor defer to school activities.

1.5 PHASING AND SEQUENCING OF THE WORK

A. Work shall be completed in an orderly manner according to a phased schedule. Phasing shall be based on considerations of the normal activities of the school, which are moninal during the summer recess.

B. Within 10 days of Notice to Proceed, the contractor shall provide a Sequencing Plan indicating the order of work and showing areas affected by each work activity. Sequencing Plan is not intended to be used as a schedule and need not be date specific, but must define durations, scope, work activities and, in the case of unit work, the number of entries anticipated, including intervals between entries and amount of time required within the unit for each entry.

C. The Sequencing Plan must indicate, at a minimum, the order, locations affected and duration of the following activities:

1. Generator – site preparation, concrete pour, fencing.
2. Trenching – Removal of paving material, excavating the trench, safety barriers, backfilling and restoration of paving material.
3. Coring – Penetrating the building foundation, protection of surrounding surfaces, restoring weathertight integrity to the opening after the conduit has been installed.
4. Electrical work – Installing the conduit, wiring and switchgear to connect the generator to the building electrical distribution network.
5. Site Restoration – repair and restoration of interior and exterior elements to approximate previous condition; sealcoating the entire driveway.

1.6 SCHEDULING OF THE WORK

A. Within 10 days of final acceptance of the sequencing plan discussed above, the Contractor shall provide a schedule for the work conforming to the approved plan and the following requirements and limitations.

B. LOADING, DELIVERY AND STORAGE

1. The site pad shall be ready to accept the generator upon delivery.
2. The protective fence, with a suitable lock, shall enclose the generator as soon as practicable after installation
   a. The safety and the security of the generator shall remain the responsibility of the installing contractor until Substantial Completion.
3. This contractor shall provide, either in-house or through subcontractors, all tools, equipment and materials necessary to implement the Scope of Work described herein.

1.7 SUBMITTALS

A. See Section 01300, Submittals, for general information regarding submittal requirements.

B. Provide 4 copies of proposed Sequencing Plan and 4 copies of the complete Construction Schedule for review by Owner and Engineer. Initial schedules may be submitted in a “Day 1” format, that is, not date specific. Dates shall be inserted upon acceptance of the schedule and determination of the date of construction start. All schedules must show on-time completion, and conformance with Division 1 requirements.

C. Include all work activities and indicate the critical path of the work.

D. Indicate critical submittal approval dates and long lead-time items.

E. Indicate the types of crews to be mobilized for each task on the schedule, and which locations will be active at any given time.

F. Revise and resubmit construction schedule until approval is secured from the Engineer.

1.8 SCHEDULE REVISIONS

A. The schedule will be reviewed each month upon submission of the “pencil requisition” to determine compliance and identify slippage. Release of payments (monthly) will be contingent upon regular submissions and updates as required.

B. Revise the construction schedule as necessary to maintain on-time completion projections. Increase numbers or size of crews as necessary to complete project as scheduled. Submit requests for extended work hours or weekend/holiday work if necessary to complete project as scheduled.

END OF SECTION

SECTION 01040

EXISTING CONDITIONS

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division 1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

1.2 EXISTING CONDITIONS

A. Before submitting a bid, the Contractor shall make a thorough examination of the conditions at the site, checking the requirements of the Plans and Specifications with the existing conditions.

B. No claim for extra compensation or extension of time will be allowed on account of the Contractor's failure to estimate properly the quantities, locations, and measurements of all items required to complete the work which could be discerned from visiting the site.

C. The Contractor shall report any discrepancies to the Engineer and request an interpretation.

1.3 EXISTING BUILDING AND GROUNDS

A. The Peirce School is an older two-story masonry building serving the elementary educational needs of the neighborhood. Although an emergency generator is located in the boiler room, is has not been operational for many decades. A new generator of adequate capacity is too large to be installed in the boiler room. Alternatively, the new (diesel) generator will be installed at the rear of building, behind the dumpsters, which will be moved forward to accommodate the generator.

B. Power from the generator is to be run in conduit laid in a trench along the side of the paved driveway. Near the street, the trench will cut transversely across the driveway to penetrate the building foundation below grade. The conduit will continue through the boiler room to the electrical room, where it will be connected to the building distribution network via suitable switchgear.

1.4 USE OF THE SITE

A. Parking at the site will be made available by the Newton Public Buildings Department.

B. The contractor is responsible for maintaining the site area, its surroundings and the path from the staging area to the building in a clean, safe, neat and secure manner. Dumpsters shall be fenced and covered to prevent unauthorized access and dispersal of waste materials. The contractor shall be responsible for removal and clean-up of any materials associated with the work that escapes the containment. Failure to conform to this requirement may result in withdrawal of permission for use, or backcharges associated with remedial cleanup.

1.5 INTERIOR SPACES

A. The work of this contract will limit contractor access to the boiler room.

B. The contractor shall be responsible to restore any damage sustained by the building.

END OF SECTION

SECTION 01050

CONDUCT OF THE WORK

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division 1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

1.2 WORK AREAS

A. Work within the building is limited to the boiler room, the adjacent electrical room and the short passage between the boiler room and the exterior of the building.

B. Work outside the building is limited to the area along the driveway to include the general location of the new emergency generator.

C. Provide secure protection at all work done outside the building, including but not limited to excavation, removal of debris, deliveries, staging, rigging, concrete and bituminous concrete placement and site restoration. Wherever possible, provide physical barriers to protect children using the playground and passers by; when physical barriers cannot be constructed because of site limitations, provide personnel whose sole assignment is to attend to traffic and access control. Such personnel shall be fully responsible for providing safety and security and shall not be simultaneously utilized for other work.

1.3 WORK HOURS

A. Unless specifically authorized by the Owner, in writing, the work must be conducted between the hours of 7:00 a.m. and 3:30 p.m. Monday through Friday, except holidays. The City will consider requests to conduct quiet work outside of these hours, permission for which will not be withheld unreasonably. The City may withdraw such permission at any time due to violations or complaints received from residents or management.

B. No work is to be done on holidays, Saturdays, or Sundays other than for emergencies. Holidays observed by the City of Newton include the following days and dates:

Holiday	**2010**
Independence Day	Celebrated July 5
Labor Day	September 6

1.4 SECURITY

A. The Contractor is responsible for the security of partially completed work until the Owner accepts the project.

B. The Contractor is responsible for controlling entry to and exit from the building, and for preventing unauthorized access by others due to inattention or neglect by its employees, subcontractors and materials suppliers. The safety and security of the Authority's residents and staff is vital, and violations will not be tolerated.

AT NO TIME MAY OUTSIDE DOORS TO THE BUILDING BE BLOCKED IN THE OPEN POSITION OR BE LEFT UNLOCKED WHEN UNATTENDED, EVEN FOR BRIEF PERIODS. VIOLATION OF THIS RESTRICTION MAY RESULT IN THE REMOVAL OF THE RESPONSIBLE PARTY/PARTIES

FROM THE PROJECT, MONETARY PENALTIES, OR POSTING OF MONITORS AT THE CONTRACTOR'S EXPENSE.

1.5 STORAGE OF MATERIALS

A. Storage of materials, tools, and/or equipment will be limited to the boiler room.

1.6 TEMPORARY PROTECTION

A. Protect all finished areas of the development through which materials, tools, or personnel will be moved.

B. Protect sills, jambs, and heads of opening through which materials or tools are handled.

C. Restore any areas damaged by contractor activity to original condition to the Owner's satisfaction at no additional cost.

1.7 WORKER CONDUCT

A. Workers shall refrain from smoking anywhere within the building, including the boiler room, and on school property. The Contractor shall remove from the project workers who consistently violate this provision.

B. Workers shall refrain from loud, obscene or abusive language at all times on the project. The Contractor shall remove from the project workers who consistently violate this provision.

C. Radios are only permitted in unoccupied areas, and only at volumes that cannot be heard outside such areas or within the building proper. The Owner reserves the right to rescind permission for radios if volume limitations are violated.

1.8 FIRE PROTECTION

A. The contractor shall comply with all requirements of the Newton Fire Department, including but not limited to scheduling master box cut-outs and reactivation; maintenance of clearances for normal and emergency access and passage; distribution, protection and storage of materials and equipment; precautions for torch cutting activities; providing temporary fire signaling devices and providing fire extinguishers.

B. The contractor shall be responsible to arrange and pay for a fire watch detail at any time and for any duration if required by the Newton Fire Department.

C. The Contractor shall be responsible to insure that work areas within the building and site are kept orderly and clean, and that combustible rubbish and construction debris is promptly removed from the site.

1.9 PROTECTION OF FIRE ALARM SYSTEMS

A. ALL FIRE ALARM DEVICES MUST BE PROTECTED FROM ACCIDENTAL ACTIVATION BY ANY AND ALL CONSTRUCTION ACTIVITIES, INCLUDING BUT NOT LIMITED TO, DEMOLITION, CONSTRUCTION, APPLICATION OF FINISHES, CLEAN UP, AND MOVING AND PLACEMENT OF TOOLS, EQUIPMENT AND MATERIALS.

B. ALL FIRE ALARM DEVICES MUST BE LEFT OPERATIONAL AT THE CONCLUSION OF EACH WORK DAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CERTIFYING THAT ALL DEVICES ARE IN OPERATION BEFORE LEAVING THE SITE.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH NEWTON FIRE DEPARTMENT EMERGENCY RESPONSE TO FALSE ALARMS. IN THE EVENT THAT THE NEWTON FIRE DEPARTMENT IMPOSES A FIRE WATCH IN RESPONSE TO FALSE ALARMS, THE CONTRACTOR SHALL BEAR ALL COSTS ASSOCIATED WITH SUCH SERVICE.

1.10 SHUTDOWN OF SERVICES

A. The Contractor's attention is especially called to the fact that continuous operation of services for the school is mandatory. If sections of the building are to be left without electricity, gas, sanitary facilities or any other services

for any duration, the Contractor shall submit a letter and obtain written approval from the Owner at least 48 hours before proceeding. Permission shall not be unreasonably withheld.

B. Potable water and sanitary waste systems may not be shut down for more than two hours at any given time. Alternative service will only be considered for potable water systems for extended shutdowns; the sanitary waste may not be interrupted for more than two hours except in unavoidable emergencies.

C. Hot water, electricity or gas systems cannot, under any circumstances, be interrupted during the hours that school is in session. If these services must be interrupted during the normal school day, then the Contractor is required to provide temporary services at no extra cost to the Owner and in accordance with the state and local regulations on health and safety, and to supply all labor, materials or whatever may be required to provide such service.

1.11 SUPERVISION

A. The Contractor must retain on the Work during its progress a competent full time licensed supervisor, satisfactory to the Owner. This supervisor shall not be changed, except with the advance consent of the Owner. This supervisor shall be in full charge of the work and all instructions given to this person by the Architect shall be binding as if given to the contractor directly.

B. The Contractor must supply to the Owner the 24 hour contact telephone number of a responsible person to be available to respond during non-work-hours for emergencies on the Project.

1.12 OWNER'S COOPERATION

A. The Owner shall assist the Contractor to perform the Work in accordance with the approved operational plan by removing obstructions that may be in the Contractor's way, upon proper notice from the Contractor.

END OF SECTION

SECTION 01100

LABOR REGULATIONS

PART 1: EQUAL EMPLOYEMENT OPPORTUNITY

1.1 GENERAL

A. The project is being financed with municipal funds. The Contractor must, therefore, conform to the most recent state minimum wage requirements. The Contractor shall recognize that statutes that are not provided herein, but must be considered and made a part of this Contract require other duties and obligations. In the case of a conflict between the Contract Documents and applicable statutes, the provisions of the statutes shall govern. Copies of the latest relevant minimum wage rates are appended to this specification. Additional data can be obtained from:

Commonwealth of Massachusetts
Division of Occupational Safety
399 Washington Street, 5th Floor
Boston, MA 02108

B. Complete and deliver a copy of the appropriate Wage Reporting Form by Friday of each week. Deliver to Re Cappoli, Purchasing Agent, City of Newton, Newton City Hall, 1000 Commonwealth Avenue, Newton, MA 02458.

C. LABOR PROVISIONS

1. Freedom of Lodging, Boarding, and Trading: Every person employed by the Contractor or Subcontractors in performing the work under this Contract shall lodge, board and trade where and with whom he elects, and it shall not be directly or indirectly required as a condition of employment that an employee shall lodge, board or trade at a particular place or with a particular person, in accordance with M.G.L., Chapter 149, Section 25.

2. Employment Preferences: In the employment of mechanics and apprentices, teamsters, chauffeurs and laborers by the Contractor and Subcontractors, preference shall first be given to citizens of the Commonwealth who have been residents of the Commonwealth for at least six months at the commencement of their employment, who are veterans as defined in clause 43 of M.G.L., Chapter 4, Section 7, and who are qualified to perform the work to which the employment relates; and secondly, to citizens of the Commonwealth generally who have been residents of the Commonwealth for at least six months at the commencement of their employment, and if they cannot be obtained in sufficient numbers, then to citizens of the United States, in accordance with M.G.L., Chapter 149, Section 26.

3. Wage Rates: The minimum rates of wages to be paid to mechanics and apprentices, chauffeurs, teamsters, and laborers shall be set forth in the schedule of rates of wages determined by the Commissioner of Labor and Industry, which schedule is contained in Appendix A and made a part of the Contract, in accordance with and subject to the provisions of M.G.L., Chapter 149, Section 26.

   a. Wage Determination Schedule: A Wage Determination Schedule, provided to the Engineer and the Owner by governmental authorities, is included in this document. The Engineer and the City of Newton do not guarantee the accuracy of the schedule, and every bidder and contractor shall be responsible for ascertaining the prevailing wages in the area where the work will be performed.

   b. Statement of Compliance: The Contractor and each Subcontractor shall furnish to the Office of the Attorney General and to the Town of Tyngsborough, within fifteen days after completion of its portion of the work, fully completed and certified copies of the attached "Statement of Compliance" certifying compliance with wage and benefit provisions of M.G.L. Chapter 149, Section 26 and 27, and as amended by Section 331 of Chapter 110 of the Acts of 1993. A copy of the "Statement of Compliance" is appended to this section.

   c. Records: Every Contractor and Subcontractor working under the terms of any contract for construction on this project shall file weekly payroll records with RE Cappoli Purchasing Agent City of Newton, Newton City Hall, 1000 Commonwealth Avenue, Newton, MA 02458 (Package must include the

wording "**PIERCE SCHOOL EMERGENCY GENERATOR REPLACEMENT"** on the outside of the envelope.) in the form described in M.G.L., Chapter 149, Section 27B in accordance with M.G.L., Chapter 149, Sections 26 and 27B and as amended by Section 174 of Chapter 110 of the Acts of 1993. The Attorney General's Office, after conducting an investigation and hearing, can order work halted on public works projects, if it finds prevailing wage violations. Any delays and costs incurred by the City of Newton associated with a stop work order for prevailing wage violation will be borne solely by the General Contractor.

D. Payment Insurance: In accordance with M.G.L., Chapter 149, Section 34A, the Contractor shall, before commencing performance of the Contract, provide by insurance for the payment of compensation and the furnishing of other benefits under Chapter 152 to all persons to be employed under the Contract, and the Contractor shall continue such insurance in full force and effect during the term of the Contract. Sufficient proof of compliance with this section must be furnished at the time of execution of this Contract. Failure to provide and continue in force such insurance as aforesaid shall be deemed a material breach of Contract and shall operate as an immediate termination thereof. The attention of the Contractor is directed to that portion of M.G.L., Chapter 149, Section 34A, which provides that whoever violates any of its provisions shall be punished by a fine of not more than one hundred dollars or by imprisonment for six months, or both; and in addition, any Contractor who violates any provision of this section shall be prohibited from contracting, directly or indirectly, with the Commonwealth or any political sub-division thereof for the construction, alteration, demolition, maintenance or repair of, or addition to, any public works or public building for a period of two years from the date of conviction of said violation.

E. Pay for Police Officers: The Contractor shall pay to any reserve police officer employed by him the prevailing rate of wage paid to regular police officers, as required by M.G.L., Chapter 149, Section 34B.

1.2 EQUAL EMPLOYMENT OPPORTUNITY

A. The Contractor and each Subcontractor shall comply with all applicable local, state and federal laws and regulations regarding equal employment opportunity and with the provisions of the following:

1. Governor's "Executive Order No. 74," dated July 20, 1970, entitled the "Governor's Code of Fair Practices," as amended by the Governor's "Executive Order No. 116," dated May 1, 1975.
2. The Fair Employment Practices Law of the Commonwealth, Chapter 151B of the General Laws of Massachusetts, as amended.
3. The rules and regulations of the Massachusetts Commission against Discrimination, as in force at the date of the Contract.

B. Equal Employment Plan: Implement an effective affirmative action plan to assure equal employment opportunity throughout the performance of work on this project. Do not discriminate against any employee or applicant for employment because of race, color, sex, religion, age, or national origin. Affirmative action equal employment opportunity plan shall apply to, but not be limited to, the following:

1. Employment, upgrading, demolition, or transfer.
2. Recruitment of recruitment advertising.
3. Layoff or termination.
4. Rates of pay or other forms of compensation.
5. Selection for training, including apprenticeship.

C. Employment Advertisements: State in all solicitations or advertisements for employees that all qualified applicants will receive consideration for employment without regard to race, color, sex, religion, age, or national origin.

D. Referral Notices: Direct special effort toward the recruitment of minority workers through unions and through referral agencies representing the minority community.

1. Advising Labor Unions: Send to each labor union or representative of workers with which the Contractor has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or worker's representative of the Contractor's commitment to equal employment opportunity.

END OF SECTION

SECTION 01290

PAYMENT PROCEDURES

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division 1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

1.2 SCHEDULE OF VALUES

A. Within ten (10) calendar days after the construction contract award and prior to Applications for Payment, the Contractor shall submit a detailed Schedule of Values in a form acceptable to the Engineer. This Schedule shall be used as basis for reviewing the Contractor's Applications for Payment for the duration of the Project.

B. The Schedule shall be itemized in a clear and concise format. Values shall be broken out according to Divisions and Sections of Work as itemized in the table of Contents in this Project manual. Separate out work for each itemized portion of the work so that sufficient detail is provided to compute values and verify levels of completion for progress payments during construction.

C. Do not omit values for any section of the work. Revise schedule of values as often as necessary to obtain approval of Engineer; such approval shall not be unreasonably withheld.

1.3 PAYMENTS

A. Applications for Payment: Once each month, on a date established at the pre-construction conference, the Contractor shall deliver to the Engineer by hand or by registered or certified mail with return receipt, an itemized Application for Payment, supported by such data substantiating the Contractor's right to payment as the Engineer may require, and reflecting retainage as outlined below.

B. Form of Application for Payment: AIA Document G702 and Continuation Sheets G703 as amended and supplied by the Owner. Each application for Payment shall be signed by the Contractor and notarized. Submit six (6) notarized copies with original signatures on each copy.

C. One week (minimum) prior to the established date for submitting Applications for Payment, the Contractor shall submit a draft Application to the Engineer and Owner for review. Each line item shall be reviewed and may require supporting documentation, if there is disagreement of any kind over a particular item.

D. Retainage: The Owner will make periodic payment to the Contractor for work performed during the preceding month and for materials not incorporated in the work but delivered and suitably stored at the site to which the Contractor has title or to which a Subcontractor has title and has authorized the Contractor to transfer title to the Owner, less a retention of not more than five percent (5%) of the approved amount of the periodic payment.

1. Additional retention may be withheld based on the Owner's estimate of the fair value of claims against the Contractor and less amounts withheld for Wage and EEO non-compliance and designated for direct payment to Subcontractors based on demands for same in accordance with the provisions of MGL c.30, sect. 39F.

E. Stored Materials: The Contractor shall include in its Application for Payment only such materials as are incorporated in the work. In the event that the Contractor wishes to apply for payment for stored materials, the following requirements must be met:

1. Present receipted vouchers or other acceptable proof of payment for such materials. Such vouchers must itemize the cost of each item, and no altered or obscure vouchers will be accepted.

2. Materials or equipment that have been approved by the Engineer through the submittal process.

3. A representative of the Engineer or Owner must be allowed to inventory the materials by a visual inspection and by comparing the observed material to the receipted voucher. In the event that materials are stored off site, the contractor must provide transportation for this representative to and from the storage location.

4. Materials must be either stored in a bonded warehouse, or on site if a stored materials insurance binder that covers the materials for which payment is requested is provided names the Owner as an insured party should the stored materials be subject to any casualty, loss, or theft prior to their inclusion in the work

5. The Contractor remains responsible for the protection of the materials until it is installed

F. Final Applications for Payment:

1. At Substantial Completion: Payment is contingent on the Engineer's issuance of the Certificate of Substantial Completion and issuance of a monetized punch-list. At Owner's discretion, retainage or a portion of the retainage may be released at the date of Substantial Completion.

2. At Final Application for Payment the Contractor shall complete the project closeout requirements specified in Section 01700.

1.4 PERMITS AND FEES

A. The Contractor shall secure and pay for the building permit and occupancy permit. The Contractor shall coordinate all efforts to obtain these permits.

B. All other permits and governmental fees, licenses, and inspections necessary for proper execution and completion of the work shall be secured and paid for by the Contractor.

1. All permits and governmental fees, licenses and inspections necessary for proper execution and completion of the work of a Subcontractor shall be secured and paid for by the Subcontractor for that trade.

1.5 SALES TAX EXEMPTION AND OTHER TAXES

A. To the extent that materials and supplies are used or incorporated in the performance of this contract, the Contractor is considered an exempt purchaser and will be issued a tax exemption number by the Owner.

1.6 CHANGES IN THE WORK

A. All changes in the work, including any increase, decrease or other equitable adjustment in the contract price or in the time for performing the contract, shall be authorized in the form of one or a combination of, the following written instruments: Change Order, Construction Change Directive, or a Minor Change in the Work. The term "equitable adjustment" as used in the paragraph shall include all adjustments to the contract price or time to which the Contractor is entitled pursuant to MGL c.30, 39 N and 39 O.

B. A Change Order is a written instrument prepared by the Engineer and signed by the Owner, the Contractor, Engineer and appropriate State or Federal agency official, stating their agreement regarding a change in the work, including a change in the contract sum or contract time.

C. A Construction Change Directive is a written order prepared by the Engineer and signed by the Owner, Engineer, and, if appropriate, State of Federal agency official, directing a change in the work and stating a proposed basis for adjustment, if any, in the contract sum, time or both. The Owner may, by Construction Change Directive, and without invalidating the contract, order changes in the work within the general scope of the contract consisting of additions, deletions or other revisions, and contract sum and time being adjusted accordingly.

D. A change order request shall be in writing and may originate with the Owner, the Engineer, the Contractor or, if appropriate, State or Federal agency official. If such a request would cause a change in the contract price, the Contractor shall promptly submit to the Engineer its cost and pricing data for such proposed change. Such data shall be accurate, current, and complete at the time of submission.

E. Changes in the contract price shall be calculated in accordance with the provisions of the General Conditions of the Contract.

F. The method provided in paragraph E above for compensating the Contractor and Subcontractors for changes in the work shall be considered to compensate adequately the Contractor and Subcontractors for any and all costs directly, indirectly or consequentially related to, or caused by, such change in the work.

G. The Engineer will have authority to order minor changes in the work not involving adjustment in the contract sum or extension of the contract time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on Owner and Contractor. The Contractor shall carry out such written orders promptly.

H. The provisions of MGL c.30, sections 39I, J, N, O & P, apply to this Contract.

I. Claims: If the Contractor has any claim or dispute of any nature arising under this contract, including a claim based on the Owner's failure or refusal to approve a Change Order request of the Contractor, in full or in part, the Contractor shall submit such claim or dispute to the Engineer, in the form of a Change Order request, for initial review and consideration, subject to further appeal to the Contracting Officer. If the Engineer fails to render a decision within thirty days after receiving written notice of such claim or dispute from the Contractor, the Contractor may file a written request for a decision with the Contracting Officer.

1. Appeal of an Engineer's decision must be made directly to the Contracting Officer by certified mail, copy to the Engineer and Owner, within twenty-one calendar days after the date on which the party making the appeal receives the Engineer's written decision. Failure to appeal within this period will result in the Engineer's decision becoming binding and final on the Owner and Contractor.

2. Pending resolution of the claim or dispute, the Contractor must proceed with the disputed Work, as directed by the Engineer. The Contractor must give written notice to the Engineer stating that it is proceeding with the disputed work under protest. Accurate records of the nature and extent of the disputed work and of the time spent and equipment used on the disputed work shall be maintained by the Superintendent and verified daily by the project representative. Failure of the Contractor to maintain such records shall cause the Contractor to forfeit its claim to additional compensation for such disputed work.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division 1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

1.2 RELATED DOCUMENTS

A. Consult the individual sections of the Specifications for the specific submittals required under those sections and for further details and descriptions of the requirements.

1.3 GENERAL PROCEDURES FOR SUBMITTALS

A. **Timeliness** - The Contractor shall transmit each submittal to the Engineer sufficiently in advance of performing related Work or other applicable activities so that the installation is not delayed by processing times, including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities.

1. Concurrent with the submittal package to the engineer, the contractor shall also send a courtesy copy of the submittals to the designated Project Manager for the City of Newton for parallel review.

2. No extension of time will be authorized because of the Contractor's failure to transmit submittals to the Engineer in advance of the Work.

B. **Sequence** - The Contractor shall transmit each submittal in a sequence which will not result in the Engineer's approval having to be later modified or rescinded by reason of subsequent submittals which should have been processed earlier or concurrently for coordination.

C. **Contractor's Review and Approval** - Only submittals received from and bearing the stamp of approval of the Contractor will be considered for review by the Engineer. Submittals shall be accompanied by a transmittal notice stating name of Project, date of submittal, "To," "From" (Contractor, Subcontractor, Installer, Manufacturer, Supplier), Specification Section, or Drawing Number to which the submittal refers, purpose (first submittal, resubmittal), description, remarks, distribution record, and signature of transmitter.

D. **Engineer's Action** - The Engineer will review the Contractor's submittals and return them with one of the following actions recorded thereon by appropriate markings as described below.

1.4 SUBMITTAL NOTATIONS

A. Submittals will be returned to Contractor marked as illustrated below:
"REVIEWED"
"REVISE AND RESUBMIT"
"REJECTED"
"FURNISH AS CORRECTED"

1. Final Unrestricted Release: Where marked "Reviewed" the Work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents.

2. Returned for Resubmittal: When marked "Revise and Resubmit" or "Disapproved" the Work covered by the submittal (such as purchasing, fabrication, delivery, or other activity) should not proceed. The submittal

should be revised or a new submittal resubmitted without delay, in accordance with the Engineer's notations stating the reasons for returning the submittal.

3. Unacceptable: When marked "Rejected" the product in question cannot be used. The Engineer will note the reason for the rejection, and suggest product(s) for resubmission.

4. Final-But-Restricted Release: When marked "Furnish as Corrected" the Work may proceed provided it complies with the Engineer's notations or corrections on the submittal and complies with the requirements of the Contract Documents. Acceptance of the Work will depend on these compliances.

B. Processing - All costs for printing, preparing, packaging, submitting, resubmitting, and mailing, or delivering submittals required by this contract shall be included in the Contract Sum.

1.5 "OR EQUALS"

A. Definition - Whenever a specification section names one or more brands for a given item, and the Contractor wishes to submit another brand for consideration, the submission shall be considered an "or-equal" or a "material substitution." For the purposes of this Contract, the terms "or-equal" and "material substitution" shall be considered synonymous.

B. In no case may an item be furnished on the Work other than the item named or described, unless the Engineer, with the Owner's written concurrence, shall consider the item equal to the item so named or described, as provided by M.G.L. c.30 § 39M.

C. The equality of items offered as "equal" to items named or described shall be proved to the satisfaction of the Engineer at the expense of the Contractor submitting the substitution.

D. The Engineer and/or the Owner may require that full size samples of both the specified and proposed products be submitted for review and evaluation. The Contractor shall bear full cost for providing, delivering, and disposal of all such samples.

E. The Contractor shall assume full responsibility for the performance of any item submitted as an "Or-Equal" and assume the costs of any changes in any Work, which may be caused by such substitution.

F. Or Equal Approval Process - On the transmittal, or on a separate sheet attached to the submission, the Contractor shall direct attention to any deviations, including minor limitations and variations, from the Contract Documents.

1. The Contractor shall submit to the Engineer for consideration of any or-equal substitution a written point-by-point comparison containing the name and full particulars of the proposed product and the product named or described in the Contract Documents.

2. Proposed "or-equal" substitutions not accompanied by a sufficiently detailed comparison will be returned unreviewed. Any delays to the schedule that result from such returns shall be the responsibility of the contractor. Returned substitution proposals may be resubmitted with the required supplementary information for consideration.

3. Such submittal shall in no event be made later than 120 calendar days prior to the incorporation of the item into the Work

4. Upon receipt of a written request for approval of an or-equal substitution, the Engineer shall investigate whether the proposed item shall be considered equal to the item named or described in the Contract Documents. Upon conclusion of the investigation, the Engineer shall promptly advise the Contractor that the item is, or is not, considered acceptable as on Or-Equal substitution. Such written notice must have the concurrence of the Owner.

1.6 SUBSTITUTIONS AND DEVIATIONS

A. Any deviations from Contract Documents, or proposed substitution of materials or equipment for those specified, must be requested by Contractor in separate letter, whether deviations are due to contractor preference, to field conditions, to standard shop practice, or other cause. The letter shall be submitted prior to transmittal of shop drawings or product data and shall describe present basis of design, proposed deviation or substitution, and reasons for change. Letter shall also describe changes in system shown, its physical characteristics (connections to

adjacent materials, electrical services, or service requirements, etc.), and differences in operating characteristics or cycles. Contractor shall be fully responsible for safety, operation, and performance of the system thus altered.

B. Under no circumstances shall materials or equipment be accepted as substitutions unless identical material or equipment has been successfully operated for at least three consecutive years. Any Shop Drawings or Product Data affected by such proposed deviations or a copy of the letter shall accompany substitutions. Where any deviation or substitution is permitted, Contractor shall coordinate fully all related changes to the work of other sections.

1. Ensure that related changes necessary for coordination are made at no additional cost to Owner. The Engineer at his sole discretion, if any, will make approval of proposed deviations or substitutions, with Owner's concurrence.

1.7 ADMINISTRATIVE SUBMITTALS

A. Within Ten (10) days of Notice to Proceed, provide the following administrative submittals.

1. Sequencing Schedule as described in Section 01020 Scheduling and Phasing. Submittal of Construction Schedule shall follow as described in Section 01020.

2. Schedule of Values – Provide proposed breakdown of contract value in sufficient detail to allow for simple evaluation of periodical requests for payment for work in place. Engineer and Owner will review the proposed schedule. Revise schedule of values as required to receive approval. Progress payments for the project will be based upon values as they appear on the approved schedule. No changes to the schedule shall be allowed after final approval. Utilize the form provided by the Owner at the Preconstruction Conference.

3. Submittal Schedule – Provide detailed listing of all items to be submitted for use on the project for review by Engineer and Owner. The schedule shall indicate by trade and specification section the date by which each such item shall be submitted and the date by which final approval of each item must be obtained. Provide a minimum of two weeks for submittal reviews by Engineer and Owner. Revise the schedule to include additional items if requested by Engineer or Owner. Submittals shall be transmitted in the order and at the time indicated in the approved Submittal Schedule.

4. Payment Schedule – Provide a projection of estimated requisition amounts at monthly intervals, related to project completion as proposed on the approved construction schedule.

B. Manufacturers' Certificates – Provide all certifications and specimen copies of both standard and required extended warranties. Conform to submission process described in this section.

C. Submittals Quantities: Provide five (5) copies of each administrative submittal.

1.8 RELATED REQUIREMENTS

A. Section 01010 - Summary of Work.

B. Section 01020 – Scheduling and Phasing

1.9 DEFINITIONS

A. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other general information furnished by the Contractor to illustrate a material, product, or system for some portion of the Work.

B. Samples are physical examples that illustrate materials, equipment or workmanship and establish standards by which work will be judged.

1.10 PROCEDURES

A. The Contractor shall review all data for each item and determine whether it complies with Contract Documents. The Contractor's transmittal letter or transmittal form shall be evidence that Contractor has reviewed the submittals

being transmitted. Shop Drawings or Product Data submitted without transmittal letter or transmittal form will be returned without review.

B. Each Shop Drawing shall indicate in title block, and each Product Data package shall indicate on cover sheet, the following information:

1. Title.
2. Name and location of project.
3. Names of the Engineer, Contractor, and Subcontractor(s).
4. Names of manufacturer, supplier, vendor, etc.
5. Date of submittal.
6. Date of each correction or revision.
7. Section and paragraph number of Specifications and/or sheet number of Contract Drawings describing work.

C. Product Data shall be prepared by the manufacturers, suppliers, vendors, etc. and shall contain all of the following information:

1. As applicable, detailed dimensional drawings.
2. Accurate and complete description of the materials of construction.
3. Manufacturer's published performance characteristics and capacity ratings (hand written performance data, alone, is not acceptable).
4. Electrical requirements and wiring diagrams.
5. Ability of specified equipment to interface with and not otherwise corrupt the existing energy management system and/or central pneumatic heating control system.
6. Ability of specified equipment to operate without interference to, and without otherwise corrupting the building's internal communications system.
7. All other information necessary to demonstrate compliance with all requirements of the Contract Documents.
8. Submittal Quantities: Provide five (5) copies of each product data submittal.

D. Shop Drawings shall be prepared by the Contractor and shall contain all of the following information:

1. Provide accurately prepared, large scale and detailed drawings prepared specifically for this Project on reproducible sheets. Show adjacent conditions and related work. Show accurate field dimensions where appropriate. Identify materials and products shown. Note special coordination required. Standard information prepared without specific reference to Project is not considered shop drawings.
2. Shop drawings include fabrication and installation drawings, including but not limited to plans, elevations, sections, details, setting diagrams, schedules, patterns, templates, and similar drawings.
3. Show every component of fabricated item, notes regarding manufacturing process, coatings and finishes, identifying numbers conforming to Contract Documents, dimensions, and appropriate trade names. Show anchorage and fastening details, including type, size and spacing. Show material gage and thickness. Indicate welding details and joint types.
4. Shop Drawings Sheet Size: Except for templates, patterns, and other full-size drawings, submit shop drawings on sheets at least 8½ inches x 11 inches, but no larger than 30 inches x 42 inches.
5. Submittal Quantities: Provide five (5) copies of each shop drawing submittal.

E. Samples

1. Submit samples identical with materials and products to be installed. Where indicated, prepare samples to match Engineer’s sample. Label sample with description, source, manufacturer’s name, and catalog number. Submit samples along with certifications that products comply with referenced standards.

2. Engineer Review: The Engineer will review samples for confirmation of visual intent, color, pattern, texture, and type. The Engineer will not test samples for compliance with other specified requirements, which shall remain exclusive responsibility of the Contractor.

3. Submittal Quantities: When variation in color, pattern, or texture can be expected in finish work, submit multiple samples (minimum of three) to show approximate limits of variations. Submit samples in following quantities:

   a. Initial Selection: For initial selection of color, textures, and pattern, submit one full set of manufacturer's available samples.

   b. Verification Samples: Submit three sets of samples selected. One (1) set will be returned to Contractor for use at Project Site for quality control comparisons.

F. Unless specific requirements for additional copies are included elsewhere, submittals shall consist of five (5) copies of each Product Data package.

1. All copies shall be sent directly to the engineer.

2. After review, four copies will be returned.

G. Submittals shall contain information relevant to the particular equipment, systems, or devices scheduled for installation, and the level of compatibility with the existing equipment, which are to be provided or furnished for this project. Do not submit catalogs that describe several different items, models, options, accessories, etc., in addition to those items required, unless all relevant information is highlighted clearly.

H. All marks on submittals, whether by Contractor, Subcontractor, manufacturer, etc., shall be made in black, blue, or green ink only. Red and yellow are reserved for marks made during the review process. Observe all special requirements for submittals, which may be specified elsewhere in Contract Documents.

I. Shop Drawings and Product Data for systems, equipment, and materials specified under different, major paragraphs of the Section shall be submitted separately.

J. Submit any samples required by Contract Document or requested by the Engineer. Samples shall be submitted accompanied by letter or transmittal and complete descriptive Product Data. It is the Contractor's responsibility to certify accuracy of samples submitted.

K. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

1.11 O & M MANUALS

A. At the completion of the project, and as a condition for Final Payment, the contractor shall submit to the Engineer for approval three copies of the following material in D-ring bound manuals: all approved submittals; service and installation manuals; operating instructions; maintenance and repair data; parts lists; warranties and a contact list for vendor and service personnel for all equipment, products and materials included in the project:

B. Include all of the final approved submittals with stamps. Organize the material into binders of manageable size, not exceeding 3". Provide as many binders as necessary for each set and label with volume numbers.

C. The sections of the bound manuals shall correspond to Specifications sections; contractor/subcontractor warranties should appear at the beginning of each section along with any special or extended warranties required by Specification or otherwise provided.

D. The cover shall identify the project, the Owner, the contractor, the Engineer and the date of submission of the final approved manuals.

E. A Table of Contents will list the subject of the numerical tabs.

1. The binder shall be organized by equipment, and contain all technical, installation, maintenance and troubleshooting information packaged with the equipment.

F. Revise and resubmit manuals as necessary to respond to Engineer and Owner's comments until approval is received.

1.12 SCHEDULE

A. Progress Schedule, Submittal Schedule, and Schedule of Values shall be updated monthly and submitted simultaneously with each Application for Payment. Payment shall be contingent upon receiving and acceptance of submittals of these schedules.

B. Allow at least two (2) weeks, exclusive of transmittal time, for review each time a Shop Drawing or Product Package is submitted or resubmitted. This time period shall be incorporated into the schedule of work so that review does not delay progress of work.

1.13 RESPONSIBILITY

A. The intent of Shop Drawing and Product Data review is to check for capacity, rating, and certain construction features. It remains the Contractor's responsibility to see that all work conforms to requirements of Contract Documents. Contractor is solely responsible for information that pertains to the fabrication process or the means, methods, techniques, sequences and procedures of construction, and for all coordination.

B. All work shall be done in accordance with submittals marked "REVIEWED" insofar as they agree with Contract Documents. Review of Shop Drawings and Product Data shall not relieve Contractor of responsibility for dimensional coordination, quantities, installation, wiring, supports, access, service, or errors that may be contained therein, nor for deviations from requirements of Contract Documents.

C. It shall be clearly understood that noting some errors but overlooking others does not grant Contractor permission to proceed in error. Regardless of any information contained in Shop Drawings or Product Data, Contract Documents are neither waived nor superseded in any way by review.

D. It shall be the Contractor's responsibility to inform subcontractors, manufacturers, suppliers, etc. of scope and limited nature of review process and to enforce compliance with contract documents.

1.14 CONDTIONS FOR RELEASE OF ELECTRONIC FILES

A. The release of requested electronic drawing files shall be contingent upon and acknowledging the contents of this document and payment of the identified fee for the files.

B. The entire risk for the data contained in the files requested is the responsibility of the Recipient, named above, of the files. Norian/Siani Engineering, Inc. shall not be held liable for the data in the electronic files. The electronic files may be used by the Recipient, named above, and their agents who are directly associated with the referenced project. The Recipient shall indemnify and hold harmless Norian/Siani Engineering, Inc., and its employees, and its consultants for and against any claims, damages, losses, and expenses, arising out of use of requested electronic files.

C. Norian/Siani Engineering, Inc. reserves the right to remove any and all professional seals and title block information from all documents and any reproduction of data from the files shall not identify Norian/Siani Engineering, Inc. without written approval from both parties.

D. If conflict exists between the hard copy of drawing held by Norian/Siani Engineering, Inc. and the electronic file, the hard copy shall govern.

E. The fee for each electronic file shall be $100,00 per drawing, payable in advance to Norian/Siani Engineering, Inc.

END OF SECTION

SECTION 01510

PROTECTION

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division 1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

1.2 PROTECTION OF PERSONS AND PROPERTY

A. The school will be occupied during the construction.

B. The Contractor shall take all necessary precautions to ensure the safety of the students, teachers, staff during construction.

C. Any damage to existing equipment, interior finished surfaces, Owner's belongings, buildings, roads, bituminous concrete areas, fences, lawns, trees, shrubs, poles underground utilities, etc., shall be made good by and at the Contractor's own expense, all to the satisfaction of the Owner.

D. The Contractor shall patch, repair and/or replace all adjacent materials and surfaces damaged after the installation of new work at no expense to the Owner and to the Owner's satisfaction.

E. All repair and replacement work shall match the existing in kind and appearance.

1.3 TEMPORARY PROTECTION

A. Protect all finished areas of the school through which materials, tools, or personnel of construction will be moved.

B. Protect sills, jambs and heads of openings through which materials or tools are handled.

C. Any areas damaged by the Contractor shall be restored to the original condition or compensated at the Contractor's expense.

1.4 ACCESS

A. The Contractor shall, at all times, leave an unobstructed way along walks (36 inches) and roadways (ten feet), and shall maintain barriers and lights for the protection of all persons and property in all locations where materials are stored or work is in progress.

1.5 SECURITY

A. The Contractor shall be responsible for providing all security precautions necessary to protect the Contractor and Owner's interests.

B. Building security must be preserved during construction.

1. To prevent unauthorized entry, no outside doors are to be propped open.

2. The contractor shall prepare a list of all persons who have been issued keys to the facility.

a. The list, a copy of which shall be submitted to the City, shall include addresses and telephone numbers of all keyholders.

1.6 NOISE, DIRT AND DUST CONTROL

A. The Contractor shall take special measures to protect the school occupants, neighbors and the general public from noise, dust and other disturbances by:

1. keeping common pedestrian and vehicular circulation areas clean and unobstructed;
2. insulating work area from occupied portions of the building, to the extent possible; and
3. sealing dust and fumes from contaminating occupied areas.

1.7 FIRE PROTECTION

A. The Contractor shall take necessary precautions to ensure against fire during construction.

B. Comply with all requirements of the Newton Fire Department.

1. Maintenance of clearances for access and passage.
2. Prevention of false alarms by temporarily disabling, replacing or modifying existing detection devices.

a. Fire or smoke detectors that are disabled or modified (i.e., enclosed in a plastic bag to preclude the entrance of dust, potentially triggering an alarm) shall be restored to full operation at the end of each work day.

b. No fire or smoke detection device shall be left disabled overnight.

C. The contractor shall arrange and pay for a fire watch if required by the Newton Fire Department.

D. The Contractor shall be responsible to ensure that the area within the contract limits is kept orderly and clean and that combustible rubbish and construction debris is promptly removed from the site.

END OF SECTION

SECTION 01520

CLEANING UP

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division 1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

1.2 CLEANING DURING CONSTRUCTION

A. Work will be performed in unoccupied areas of an otherwise occupied building; areas accessed by the contractor shall be maintained daily to the Owner's satisfaction.

B. The following guidelines are provided to ensure that not only will the generation of nuisance dusts and other contaminants be minimized, but also, the swift and complete removal of nuisance dusts and other contaminants will be effected.

1. Maintain the work sites such that tracking of dust and debris is minimized.
2. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
3. Do not burn or bury rubbish or waste materials on the site.
4. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
5. Wet down dry materials to prevent blowing dust.
6. Maintain the Site free from accumulations of waste, debris, and rubbish.
7. Provide on-site containers for collection of waste materials and rubbish.
8. At the end of each day, remove and legally dispose of waste materials and rubbish from site unless otherwise approved.
9. Disposal of materials shall be in compliance with all applicable laws, ordinances, codes, and by-laws.
10. Dust arising from excavating, backfilling, concrete coring or drilling shall be minimized.
11. If water is used as a lubricant during coring or drilling, then measures must be taken to contain and remove the water during work; the resultant mud shall be wet-mopped clean. Restore all floor surfaces affected by coring or other construction activity to equal or better than pre-construction condition.

1.3 FINAL CLEANING

A. Prior to submitting a request to the Engineer to certify Substantial Completion of the Work, the Contractor shall inspect all interior and exterior areas and verify that all waste materials, rubbish, tools, equipment, machinery, and surplus materials have been removed, and that all sight-exposed surfaces are clean.

1. Leave the Project clean, inside and outside.

B. Unless otherwise specified under other sections of the Specifications, the Contractor shall perform final cleaning operations as herein specified prior to final inspection.

C. Cleaning shall include all surfaces, interior and exterior, which the Contractor has had access to, whether new or existing.

D. Use only cleaning materials recommended by the manufacturer of the surface to be cleaned.

E. Use cleaning materials which will not create a hazard to health or property and which will not damage surfaces.

F. Remove grease, mastic, adhesive, dust, dirt, stains, labels, fingerprints, and other foreign materials from sight-exposed interior and exterior surfaces.

1. This includes cleaning of the Work of all finishing trades where needed, whether or not cleaning by such trades is included in their respective specifications.

G. Repair, patch, and touch up marred surfaces to the specified finish, to match adjacent surfaces.

H. Broom clean exposed concrete surfaces and paved surfaces. Rake clean other surfaces of grounds. Do not allow construction or demolition debris or waste to be incorporated into soils to remain on site.

I. Dust arising from concrete coring or drilling shall be vacuumed from the affected areas daily, or more frequently if doing so will reduce tracking of construction dust throughout the school.

1. Frequency of cleaning shall meet the Owner's requirements with respect to cleanliness of the dwelling units and the common areas.

J. Owner’s responsibility for cleaning commences at Substantial Completion, except for soil, stain or dirt caused by continuing contractor activity during punch list and close out.

END OF SECTION

SECTION 01700

PROJECT CLOSE-OUT

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division 1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

1.2 OCCUPANCY PERMIT

A. The Contractor shall coordinate the efforts of all Subcontractors and obtain the Occupancy Permit from the local Building Department if required by the Department. The Contractor shall pay any Building Department fee associated with the Occupancy Permit.

1.3 SUBSTANTIAL COMPLETION

A. The General Contractor shall supervise and direct the Work, using his best skill and attention. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Contract.

B. Notice of Substantial Completion: When the General Contractor considers the entire work of the contract to be within 30 days of being ready for substantial completion inspection; the General Contractor will provide such written notice to the Engineer. Included with this notice, the General Contractor will submit to the Engineer a list of items remaining to be completed or corrected. This list shall include all remaining General Contractor and Subcontractor items to be provided under the Contract Documents.

C. Work is considered Substantially Complete when no more than one percent (1%) of the contract value remains to be completed, all equipment and materials are installed and operating, and the installation can be used as intended. Remaining work must be minor or cosmetic in nature, and may not affect the functioning of any part of the system.

D. Within 7 calendar days of the notice, the Engineer will examine the work and notify the General Contractor whether it accepts the 30-day notice as reasonable and realistic. Included with the Engineer's notice will be a preliminary list of additional items that are not acceptable and must be corrected before Substantial Completion inspection.

E. The General Contractor will correct all remaining deficiencies identified on either his list or the Engineer's list no later than 10 calendar days prior to the anticipated date of Substantial Completion. The Engineer will then perform a Substantial Completion inspection to verify the work has been completed.

F. If the Engineer agrees that the Work is Substantially Complete, the Engineer will promptly make a thorough inspection and prepare a punch list, setting forth in accurate detail any items on the Contractor's list and additional items that are not acceptable or incomplete. The work items on this list shall have values assigned by the Engineer and Owner, and these amounts will be withheld from any retainage that may be released subsequently. The Contractor shall coordinate all Subcontractors to achieve prompt completion of the punch list. Punch list work will not be permitted in occupied apartment units without proper notification.

G. Amounts listed on the monetized punch list will be released only upon completion of the entire list, as established by the Engineer’s final inspection.

H. If the Engineer determines that the Work is not Substantially Complete, the Engineer shall inform the Contractor of those items that must be completed before the Engineer will prepare a punch list. Upon completion of those items, the Contractor shall again request the Engineer to prepare a punch list.

I. The Contractor shall not be relieved of the responsibility to provide Contract items left off of the Engineer's punch list.

J. The Engineer may revise the punch list, from time to time, to ensure that all items of Work are properly completed.

1.4 FINAL COMPLETION

A. Related Requirements

B. The Contractor's attention is directed to the General Conditions.

C. Consolidated Final Completion

1. Upon completion of all of the items listed on the Engineer's Punch List and, after the Contractor has provided all Record Drawings, Operating Manuals, Warranties, Guarantees, and Spare Parts as required by the Contract, the Engineer shall prepare the Consolidated Certificate of Completion. This certificate shall be processed in accordance with the provisions of the General Conditions and MGL Chapter 149 as applicable.

2. The Contractor shall provide the Engineer with a notarized Contractor's Certificate and Release and a final Application for Payment to complement the closeout process. The Owner for the contractor’s use shall provide forms for this purpose.

D. Two Part Final Completion

1. If within 30 days after Substantial Completion, any of the items on the Engineer's punch list are not complete or if the Contractor has not provided the appropriate Record Drawings, Operating Manuals, Warranties, Guarantees, or Spare Parts the Engineer shall assign a monetary value for each incomplete item as well as any other items as provided by M.G.L. c.30 sec.39K.

2. The Engineer shall also prepare a PART 1 of the Certificate of Completion. This Certificate shall be processed in accordance with the provisions of the General Conditions.

3. The Contractor shall provide the Engineer with a Notarized Contractor's Certificate and Release and an appropriate Application for Payment. This Application shall be for an amount equal to the remaining balance of the Contract less the amount of the Engineer's monetized punch list and any other items as provided under M.G.L. c.30 sec.39K.

4. The Contractor shall complete all remaining Work in accordance with the provisions of the General Conditions.

5. Upon completion of all remaining items, and after receipt of all appropriate Record Drawings, Operating Manuals, Warranties, Guarantees, and Spare Parts required by the Contract Documents, the Engineer shall prepare PART 2 of the Certificate of Completion (Final). This certificate shall be processed in accordance with the procedures described in the General Conditions.

6. The Contractor shall provide a new, notarized Contractor's Certificate and Release and a final Application for Payment to complement this closeout process.

1.5 RECORD DRAWINGS

A. Consult the individual sections of the Specifications for the specific requirements of those sections. In cases of inconsistency the more stringent requirement, as directed by the Engineer, shall be required.

B. Prior to final payment and completion the Contractor shall provide all Record Drawings as required under other sections of the Specifications, including 01720, Surveys and Record Drawings.

1.6 OPERATING AND MAINTENANCE INSTRUCTIONS

A. Prior to final payment and completion the Contractor shall provide all Operating Manuals and Maintenance Instructions as required by the Contract Documents per Section 01300.

B. Consult the individual sections of the specifications for the specific requirements for those sections and for further details and descriptions of the requirements.

C. Instruction Of Owner's Personnel, per other sections of the Specification.

END OF SECTION

SECTION 01720

SURVEYS AND RECORD DRAWINGS

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division 1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

D. Accurate as-built records are a critical requirement of this contract and will be evaluated prior to each periodical payment. Monetary value may be assigned to As-Builts and such values withheld from periodical or final payments until As-Builts are provided in an approved form.

1.2 RECORD DRAWINGS

A. Record Drawings shall consist of all the Contract Drawings.

B. From the sets of drawings furnished by the Owner, the Contractor shall reserve one set for record purposes. From this set, the Contractor shall detach and furnish, at no charge to the Mechanical and Electrical Subcontractors the drawings of their portion of the Work for the same purpose.

C. The Contractor and the above Subcontractors shall keep their marked up As-built set on the site at all times and note on it in colored ink or pencil, neatly and accurately, at the end of each working day, the exact location of their work as actually installed. This shall include the location and dimensions of underground and concealed Work, and any architectural, mechanical, or electrical variations from the Contract Drawings. All changes, including those issued by Addendum, Change Order, or instructions by the Engineer shall be recorded. Marked up As-built drawings shall be prepared for the entire project and include all Work, including but not limited to:

1. The location of all underground utilities and appurtenances referenced to permanent surface improvements, both horizontally and vertically at ten (10) foot intervals and at all changes of direction.

2. The location of all internal utilities and appurtenances, concealed by finish materials, including but not limited to valves, coils, dampers, vents, cleanouts, strainers, pipes, junction boxes, turning vanes, variable and constant volume boxes, ducts, traps, and maintenance devices.

    a. The location of these, items shall be shown by offsets to structure and drawing grid lines.

    b. The tolerance for the actual location of these items on the marked up As-built Drawings shall be plus or minus two (2) inches.

    c. Each item shall be referenced by showing a tag number, areas served, and function on the marked up As-built drawing

D. The Engineer and the Owner will inspect the neat and legible marked up As-built drawings at the site monthly at the submission of the draft Application for Payment. The proper and current maintenance of the information required on these drawings shall be a condition precedent to approval of the monthly applications for payment.

E. At Substantial Completion, the Contractor shall submit the complete set of marked up As-built drawings to the Engineer. The Contractor shall check all marked up As-builts prepared by subcontractors and certify in writing on the title sheet of the drawings that they are complete and correct, prior to submission to the Engineer.

F. The Engineer shall review the marked up As-built drawings and verify by letter to the Owner that the Work is complete.

1. The contractor shall, at his expense, incorporate all changes onto original drawings, which shall be supplied to the contractor by the Engineer in electronic form: AutoCad 2000.

2. Upon submission, completion and acceptance of Record Drawings, the contractor shall provide five (5) full size and five (5) one half size sets of blackline and three (3) copies of digital information on CDs in AutoCad 2000.

G. Submission of accurate marked up As-built drawings and their approval by the Engineer shall be a condition precedent to final payment.

END OF SECTION

DIVISION 2

SECTION 02070

DEMOLITION AND SELECTIVE REMOVALS

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division 1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

D. Regulations: Comply with all applicable federal, state, and local laws and ordinances, and the requirements of listed agencies and utility companies.

1. Obtain and pay for all required permits, licenses, and certificates.

1.2 SCOPE OF WORK

A. Included in this Section is the furnishing of all labor, materials, equipment and accessories required to provide a complete installation of the work described herein and on the Drawings. Build the work of other trades into the work of this Section as required.

B. The work under this Section consists of:

1. Remove and legally dispose of the major elements and components noted herein, as well as all other related materials, components, and systems that are not to remain or be reused.

2. Demolition work shall be coordinated with the contractor as well as all other related sub trades to ensure that elements to be demolished are demolished in the proper sequence and at the proper time such that critical services are not unduly interrupted and that replacement elements will be replaced consistent with requirements for construction of services.

3. Providing all penetrations, coring, and sawing of concrete for plumbing, mechanical, and electrical openings, pipe, conduit, equipment and services including coordination drawings.

a. Coring and sawing is defined as including suitable covering, sealing and patching, including fire-stop materials, as required.

4. Trenching, backfilling and patching of the existing bituminous concrete driveway.

5. Removing and legally disposing of all related ancillary elements, materials and equipment that will be rendered superfluous by this project.

6. Providing and coordinating the dumpster, hauling, and disposal requirements for disposal of all materials from all trades.

7. See applicable Drawings.

C. Miscellaneous

1. During the performance of the Demolition work, include removal of other components, devices, ancillary piping, wiring, conduit, or related elements not specifically referenced previously and not to be reused, but necessary for a complete project.

a. All such elements are hereby defined to be removed by a technician skilled and licensed in the appropriate discipline; if there is any question, the decision of the Engineer shall be final.

D. Demolition by torch

1. No demolition by torch shall be permitted without the express written consent of the Newton Fire Department (NFD).
2. Follow all NFD requirements.
3. Asbestos abatement or use of a cutting torch will be permitted only during the hours that there are no students scheduled to be in the school.
    a. Verify occupancy during the summer recess with the Owner before scheduling demolition activities.
4. Where Demolition by torch is permitted, then due care must be taken to prevent igniting surrounding combustible materials.
    a. To ensure against accidental fire, all incidental combustibles must be removed from the site prior to lighting the torch.
    b. Further, a fire-watch as required by the NFD must be posted during the time that the torch is in operation, and extinguishers must be readily available.
    c. To ensure against latent embers, which may later erupt into fire, the fire-watch must be maintained for at least one hour after the torch is extinguished or as required by the NFD.

E. Disposal

1. Provide legal off-site disposal of all waste materials generated by this project
2. Provide the Owner with documentation specifying the hauling/disposal contractor and the location of ultimate repose for any and all materials.

1.3 RELATED WORK UNDER OTHER SECTIONS

A. Examine Contract Documents for requirements that affect Work of this Section. Other Specification Sections that directly relate to Work of this Section include, but are not limited to the following:

B. Excavating and Backfilling, Section 02200

1. The site is an elementary school. Open trenches must be adequately protected from inquisitive children at all times, particularly when the contractors are not on-site.
2. Trenching cannot obstruct the passage of trucks to remove and replace the dumpsters at the rear of the school.
3. Trenches perpendicular to the driveway must be covered with steel plate sufficient to safely support a fully-loaded dumpster truck.
4. Excavating contractor to remove and dispose of all unused materials related to their specified Work.

C. Asbestos Abatement, Section 13280

1. Asbestos is known to exist in the boiler room.
2. Prior to demolition, all known asbestos must be abated in all areas noted in Section 13280 that are affected by the work of this section.
3. If additional asbestos is suspected to exist, stop all work and notify the Engineer.
    a. Without undue delay, testing will be conducted; asbestos-containing materials will be abated.
    b. The contractor will be notified when the site has been remediated.

D. Electrical, Section 16000

1. Electrical contractor to cut cap and make safe in coordination with the work of all trades.
2. Electrical contractor to provide penetration plans for coordination.
3. Electrical contractor to remove and dispose of all unused wiring and conduit, and all materials related to the specified demolition.

4. Electrical contractor to coordinate the siting of the emergency generator and the laying of the conduit.

1.4 SUBMITTALS

A. Submit the following in accordance with Conditions of the Contract and Division-1 Specification Sections:

1. Documentation identifying the hauling disposal contractor.

2. Documentation identifying the location of final repose for all materials.

1.5 PROJECT CONDITONS

A. Resolve any discrepancies or questions with the Engineer prior to beginning of the work.

B. Occupancy: The building will continue to function as a school during construction. Conduct selective demolition work in a manner that will minimize the need for disruption of school operations. Note time constraints, cited previously, during which demolition cannot take place. Provide minimum of 72 hours advance notice to Owner of demolition activities that will affect Owner's operations. The Owner reserves the right to re-schedule work, upon 24 hours notice to the contractor.

1. Take all measures necessary to permit continued use of the building during construction, including maintenance of circulation and access areas, fire egress, security against unauthorized entry, protection from dust, dirt and excessive noise, weather protection, and protection and maintenance of exiting utility services.

C. Condition of Structures: Owner assumes no responsibility for actual condition of items to be demolished.

1. Owner will maintain conditions existing at time of inspection for bidding purposes insofar as practicable. However, minor variations within structure may occur by Owner's removal and salvage operations prior to start of selective demolition work.

D. Sequencing: Work of this section shall be properly sequenced and scheduled with asbestos abatement work.

E. Protective Measures: Provide temporary barricades and other forms of protection to protect the Owner's personnel and general public from injury due to selective demolition work. Do not Block required fire egress except where alternate egress routes are provided and approved by authorities having jurisdiction.

1. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to occupied portions of building.

2. Provide shoring, bracing, or support within trenches as required to prevent movement, settlement, or collapse of the sidewalls.

3. Provide protection against children and others falling into open trenching, particularly after work hours.

4. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.

5. Protect finished floors with suitable coverings in the vicinity of work activity.

6. Remove protections at completion of work.

7. Whenever required by local fire officials provide for 24-hour fire watch.

a. Additionally, hire and pay any police officer, fireman, or inspector required by authorities having jurisdiction over the work.

b. Workmen's Compensation and Employer's Liability Insurance shall cover all personnel employed.

8. Provide suitable barricades around any equipment or materials left at the site for the performance of the Work. Do not permit unauthorized access.

9. Take care to avoid damage to existing material, ornamentation, asphalt paving (with the obvious exception of that which is to be excavated) and landscaping scheduled to remain in place.

a. Existing material or building features not scheduled for removal, but removed and/or damaged as a result of Work of this Section, shall be replaced and/or repaired to the Engineer's satisfaction at no extra cost to the Owner.

10. By mechanical means and/or creating a negative pressure in the affected space, prevent demolition dust from blowing throughout the Project site.

a. Use drop cloths and plastic sheeting to control and confine dust, and wet down small areas as required to minimize dust generation.

b. Employ measures to minimize the formation of airborne dust during exterior excavation and backfilling operations.

F. Damages: Promptly repair damages to adjacent facilities or surfaces or materials to remain cause by demolition work. Perform this work by persons skilled in the trade. The Engineer may apply any industry standard to judge repair work required under this section.

G. Utility Services: Maintain existing utilities and protect them against damage during demolition operations.

1. Do not interrupt utilities except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions of existing utilities as acceptable to governing authorities.

2. Maintain fire protection services during selective demolition operations.

H. Environmental Controls: Use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.

1. Do .not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

1.6 OWNERSHIP OF REMOVED MATERIAL

A. Contractor's Ownership of Debris: Except as otherwise indicated, all materials to be demolished or removed, including mechanical, plumbing and electrical systems materials, as well as all debris, rubbish, excavated material and other surplus material, shall become the property of the Contractor and shall be removed from the site and legally disposed of at his expense.

1.7 HAZARDOUS MATERIALS

A. The Contractor is cautioned that asbestos is believed to exist within the boiler room.

1. Coordinate with Hazardous Materials subcontractor to ensure that all areas to be cored or saw cut are asbestos-free.

2. Refer to Section 13280, Asbestos Abatement, for further direction.

B. If additional asbestos not designated for removal in documents is encountered or suspected, stop all work immediately and notify the City of Newton and the Engineer for direction.

C. If it is determined that the suspected surfaces contain asbestos, then all asbestos must be fully abated and the affected area declared clean by the HazMat subcontractor before coring/sawing can begin or resume.

1. It shall be the responsibility of this contractor to ensure that the HazMat subcontractor is made aware of all locations as well as the suspected extent of possible asbestos.

PART 2: MATERIALS AND PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Provide all materials required for a safe removal operation, including materials for dust control and protection.

2.2 EQUIPMENT

A. Provide all equipment as necessary and for the safe execution of selective removals.

B. Equipment used shall be of types best suited for the work to avoid damage to all areas and related features specified or required to be protected.

C. Do not use impact tools except when authorized by Structural Engineer. To the extent practicable, saw cut and remove concrete without damage to adjacent construction.

PART 3: EXECUTION

3.1 PREPARATION

A. Consult with Engineer and Owner's representative:

1. At start-up, prior to initiation of Work, meet the Engineer and the Owner's representative at the site to review the Scope of Work and general procedures.

2. Where Contract Documents or field instructions seem ambiguous with respect to scope of Work, demolish nothing.

a. Contact the Engineer promptly for clarification.

B. Protect Existing Work: Execute all work so as to protect all work, which is to remain.

C. Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on drawings in accordance with demolition schedule and governing regulations, in particular OSHA worker safety, requirements. Careful coordination with Section 13280, Asbestos Abatement, is required. A licensed Asbestos Abatement Contractor must complete any work of this Section, which impacts asbestos-containing materials in accordance with Section 13280, in addition to all applicable local, state, and federal regulations.

1. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain using power-driven masonry saw or hand tools.

2. Promptly remove debris from the site.

3. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.

4. For interior slabs on grade, use removal methods that will not crack or structurally disturb adjacent slabs or partitions. Use power saw where possible.

5. Completely fill below-grade areas and voids resulting from the performance of the Work.

D. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Owner's Representative in written accurate detail. Pending receipt of directive from Owner's representative, rearrange selective demolition schedule as necessary to continue overall job progress without undue delay.

3.2 PREPARATION FOR CONCRETE CORING & PENETRATIONS

A. Prior to any coring or cutting operations:

1. Protect surrounding surfaces.

2. If necessary, provide a portable dam to contain water.

3. Do not connect a load greater than 12 amperes to building electrical circuits.

4. As required, provide extension cords of suitable gauge to extend power from nearest source to work site.

5. Do not use extension cords longer than 100 feet.

B. Prior to connecting coring or sawing equipment, verify that the circuit to which the equipment will be connected is adequate to carry the electrical load.

1. If power is interrupted (i.e., a circuit breaker is tripped), this contractor shall be responsible for locating and resetting the tripped breaker.
2. Secure the services of an electrician if necessary to restore power without delay.

3.3 PENETRATION SIZES AND LOCATIONS

A. Penetrations shall be sufficiently oversized to accommodate sealant.

B. Provide coordinated penetration plan with locations and core diameters.

C. Coordinate with the trades to determine the hole diameter to accommodate each size of conduit that will pass through a cored opening.

3.4 CORING & CUTTING

A. The contractor shall provide all cutting of bituminous concrete paving and coring of walls in masonry or concrete or reinforced concrete construction. The contractor shall provide all coordination of trades and items requiring penetrations. After services and items requiring penetrations have been installed, this contractor shall seal all penetrations as specified herein.

B. The contractor shall obtain from all trades, the location and sizes of all conduits or other items requiring penetrations, and shall coordinate the location and the method of the cut or core so to minimize damage to the structure as well as excessive lengths of conduits. The contractor shall lay out the proposed cut showing existing structural conditions shall obtain the approval of the structural engineering before making any cores or cuts. Carefully coordinate with asbestos contractor.

C. If cuts require reinforcing or additional structure to carry loads, provide all such reinforcing at no additional cost to the Owner.

D. Penetrations shall be performed so as to make a clean and readily sealable hole in the structure or material being penetrated. Make the minimum clean sharp straight hole necessary for all items or services. After the trades installed all items in a penetration, seal the penetration.

E. If water is used as a lubricant and/or a dust suppressant, then all necessary and reasonable precautions shall be taken to ensure that the surrounding area is not soiled or damaged when the bit breaks through the slab.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from the building site excavated earth not to be reused, debris, rubbish, and other materials resulting from demolition operations. Transport and legally dispose off site.

B. Remove excavated material that will not be used for backfilling.

1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.
2. Notify the Owner if materials uncovered, discovered or encountered during demolition are believed to be hazardous as defined under applicable local, state or federal regulations.
3. No extension of contract time will be granted for delays due to notification to the owner for material that proves not to be hazardous.

C. Provide dumpster for disposal of all construction-related debris for all trades. Legally dispose of debris as necessary to maintain orderly progress of the work. Burning of removed materials is not permitted on the project site.

3.6 CLEANING, CLEAN–UP, & REPAIR

A. Prompt Removal of Debris: Remove all debris and materials resulting from removal operations from the site as soon as practicable.

B. Upon completion of demolition work, promptly remove tools, equipment, and demolished materials from the site. Remove protections and leave interior areas broom clean.

C. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations. Repair adjacent construction or surfaces soiled or damaged ball selective demolition work by selective demolition work.

D. During the course of construction clean work areas, site, streets, and adjacent private or public property of all construction related, debris, dust and, dirt. Keep work areas picked up to achieve best production from all trades.

E. Provide dust control during all construction related activities.

F. Do not store or permit debris or materials to accumulate on site, or to impede access at any part of the school.

3.7 PENETRATIONS OF FIRE RATED ASSEMBLIES

A. Protect Fire seal during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealers immediately and reseal joints with to new materials to produce joint sealer installations with repaired areas indistinguishable from original work.

B. Installation of Fire-Stopping Sealant in fire rated enclosures, slabs, and other construction: Install sealant, including forming, packing, and other accessory materials to fill openings around mechanical plumbing, fire protection or electrical conduits, ducts or other distribution systems or services penetrating floors and walls to provide fire-stops with fire resistance ratings indicated for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.

1. Foamed-In-Place Fire-Stopping Sealant: Through penetrations in fire-resistance-rated floor and wall assemblies involving pipes, conduits, etc. with gap or; gaps to be sealed larger than 1" wide

2. One part fire stopping sealant through penetrations in fire-resistance-rated floor and wall assemblies involving pipes, conduits, etc. with gap or gaps to be sealed less than 1" wide.

END OF SECTION

SECTION 02200

EARTHWORK & LANDSCAPE

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division-1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

D. Regulations: Comply with all applicable federal, state, and local laws and ordinances, and the requirements of listed agencies and utility companies.

1. Obtain and pay for all required permits, licenses, and certificates.

E. The contractor shall contact DIG-SAFE (1-888-344-7233) and follow normal procedures prior to commencing any excavation work at the site.

1.2 SCOPE OF WORK

A. Included in this Section is the furnishing of all labor, materials, equipment and accessories required to provide a complete installation of the work described herein and on the Drawings. Build the work of other trades into the work of this Section as required.

B. The work under this Section consists of:

1. Provide all earthwork required for the project, to maintain the stability of all excavations and surrounding improvements and to comply with the requirements of authorities having jurisdiction.

2. Protect existing landscape elements and restore landscaping to original or better condition.

3. Dispose of surplus materials in a legal manor.

4. Provide all required protection enclosures and other temporary construction required by conditions, ordinances, etc., including all fences, barricades guard rails, street plates, warning lights, and other items as necessary and required by life safety codes.

5. Perform all required pumping, dewatering, etc. necessary to maintain, excavated spaces free of accumulated water.

6. Provide all shoring, bracing, sheet piling and similar protective construction as required to insure safe/secure operations as defined by the code.

7. Provide all other items of excavation, filling, and related work reasonably inferred by the Drawings and make the work of this Section complete.

1.3 RELATED WORK IN OTHER SECTIONS

A. Examine Contract Documents for requirements that affect Work of this Section. Other Specification Sections that directly relate to Work of this Section include, but are not limited to the following:

B. The following work is not included in this Section and shall be performed under other Sections:

1. Demolition & Selective Removals, Section 02070.

2. Electrical 16000

1.4 PERMITS, CODES, AND SAFETY REQUIREMENTS

A. Compliance: Comply with all rules, regulations, laws of the City and State, and all other authorities having jurisdiction over the project site. The Contractor shall provide all labor, materials, equipment and services necessary to make the work comply with such requirements without additional cost to the City of Newton.

B. Comply with the provisions of the Manual for Accident Prevention in Construction of the Associated General Contractors of America, Inc. and the requirements of the Occupational Safety and Health Administration, United States Department of Labor.

C. Procure and pay (if required) for all Permits, Licenses provided per Division 1 required for the complete work specified herein and shown on the Drawings.

D. The Contractor shall not close or obstruct any street, sidewalk, or passageway without written permission from authorities having jurisdiction. The Contractor shall so conduct his operations as to interfere as little as possible with the use ordinarily made of roads, driveways, or other facilities near enough to the work to be affected.

1.5 PROTECTION OF EXISTING CONDITIONS

A. Utilities: The Contractor in executing work under this Section shall observe all rules and regulations governing the respective utilities. All work shall be executed in such a manner as to prevent any damage to existing buildings, streets, paving, service utility lines, structures and adjoining property.

B. Locate and mark underground utilities to remain in service before beginning the work. Protect all existing utilities to during operations. Do not interrupt existing utilities except when authorized in writing by authorities having jurisdiction.

C. When an active or inactive utility line is exposed during construction its location and elevation shall be plotted on the Record Drawing by the Contractor and both the Engineer and the Utility Owner notified in writing.

D. Provide barricades, fences, lights, signs, and all other devices required for the protection of the public.

1.6 DUST CONTROL

A. During the construction period, the Contractor shall take special measures including, but not limited to, wetting down to control dust on site, in order to prevent annoyance and/or damage to adjacent property, whether public or private. Calcium chloride or any other chemical material may not be used on subgrades of areas to be seeded or planted.

B. The Contractor shall take all necessary measures to keep streets, over which equipment and service for project travel, clean and free from dirt, dust, mud and debris resulting from operations. The actions taken shall meet the requirements of all parties having jurisdiction.

1.7 DELIVERY, STORAGE AND HANDLING

A. Restrict stock piling to locations approved by the Owner.

B. Remove excess excavated material from the site promptly.

1.8 PROJECT CONDITONS

A. If subsurface conditions are such that normal excavation cannot proceed, stop all work and notify the Engineer for disposition.

B. Erosion Control: Provide effective erosion control-to-control run-off and prevent silting of subsurface drainage systems.

C. Dust Controls: Take effective measures to prevent windblown dust and erosion. Do not use calcium chloride or similar chemicals.

D. Traffic: Conduct operations to ensure minimum interference with local traffic along the driveway as well as public ways and other adjacent facilities.

E. Protection: Ensure the safe passage of persons around the area of the earthwork.

1. Bear in mind that the site is an elementary school, suggesting that extraordinary measures to protect youngsters, who will view the site as an attraction, from harm.
2. Provide adequate shoring to prevent collapse, injury and damage.

PART 2: PRODUCTS

2.1 MATERIALS

A. Sand and gravel shall consist of hard, durable sand and gravel, and shall be free from snow and ice, roots, sod and other deleterious or organic material.

SIEVE SIZE	PERCENT FINES (WT.)
No. 4	100.00
No. 8	95-100
No. 16	70-100
No. 30	40-75
No. 50	10-35
No. 100	2-5

B. Granular fill shall be free from snow and ice, roots, sod, and other deleterious or organic material:

SIEVE SIZE	PERCENT PASSING
½ inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-8

C. Ordinary fill shall be friable soil containing no stone greater than two-thirds loose lift thickness. The material shall be free of trash, ice, snow, roots, stumps and other organic material. It shall contain less than 20 percent passing the No. 200 size sieve and exhibit an overall plasticity index no greater than 5

D. Crushed stone shall consist of durable crushed rock or durable crushed gravel stone, free from ice and snow, sand, clay, loam or other deleterious material. The crushed stone shall have a maximum percentage of wear as determined by the Los Angeles Abrasion Test (AASHTO-T-96) of 45 percent.

SIEVE SIZE	PERCENT FINES (WT.)
1 inch	100.00
3/4 inch	90-100
1/2 inch	10-50
3/8 inch	0-20
No. 4	0-5
No. 200	<0.5

E. Topsoil

1. Topsoil shall not be removed from the site.
2. Reused existing topsoil or replacement topsoil shall be such that 100 percent shall pass through a 1 inch screen and 95 shall pass through a ¼ inch screen

2.2 GRASS SOD

A. Provide new-crop sod grown within a sixty-mile radius of the site.

B. Transport under vapor proof tarp.

C. Sod shall be composed of the following varieties in the proportions stated. Deliver sod on the day it is harvested.

Scientific Name	Common Name	Proportion
Festuca rubra	Pennlawn Fescue	50%
Lolium perenne	Penn Fine Ryegrass	25%
Poa pratensis Baron	Baron Kentucky Bluegrass	25%

2.3 USE OF MATERIAL

A. Sand-Gravel shall be used as a base course below the conduit.

B. Granular fill shall be used below the base course for compact fill.

C. Ordinary fill shall be used for backfill within grass areas.

D. Crushed Stone shall be used for saturated areas within the driveway.

PART 3: EXECUTION

3.1 COORDINATION

A. Prior to the start of any earthwork, the Contractor shall arrange an on-site meeting with the Owner and/or the Engineer for the purpose of establishing a schedule of operations and inspection requirements.

3.2 EXCAVATION

A. Excavation shall be performed to elevations and dimensions indicated plus sufficient space to permit erection of forms, etc.

B. If organic soils, brick or concrete masonry, footings, boulders in excess of 12 inches or rock are encountered at the required elevations, they shall be removed and replaced with crushed stone.

C. Protect the bottom of the excavation from frost and water, from whatever source.

3.3 SHEETING, SHORING AND BRACING

A. Provide shoring, sheeting and bracing of excavated areas as required to assure safety against collapse of earth at side of excavation.

B. Provide steel plates to permit vehicular traffic over trenching perpendicular to driveway.

C. Comply with local and state safety regulations and with provisions of OSHA.

3.4 PLACING FILL

A. Prepare locations for backfills in an approved manner by removing all excess, decomposable, solid waste and unsuitable materials.

B. Each layer of fill shall be compacted to the specified density the same day placed.

3.5 COMPACTION

A. All fill shall be placed and compacted to not less than the following specified ASTM maximum dry densities as determined by ASTM D-1557-78 Method C.

1. Below conduit: 95 percent.

2. Within top 3 feet in driveway area: 90 percent.

B. Place fill in loose layers, no more than six inches, and compact by four passes of a manually-operated, powered vibratory drum plate or drum compactor.

3.6 RESTORATION

A. Restore bituminous concrete driveway.

B. Sealcoat entire driveway; follow manufacturer's instructions with respect to cure time after patching asphalt.

C. Barricade driveway after sealcoating until coating has fully dried.

D. Restore all grades to original levels or to blend with surrounding topography.

E. Foundation plantings may be removed with a root ball, set aside and replanted. If transplantation fails, provide replacement with identical size and species.

F. Grass replacement and restoration shall be completed using sod composed of perennial ryegrass.

1. Prepare minimum four-inch thickness of topsoil beneath sod.

2. Water sod within one hour of installation.

G. Transplant and restore landscape during the weather and season recommended by a reputable nursery. Obtain Owners approval for planting schedule.

3.7 SPECIAL RESPONSIBILITIES

A. Coordination: Cooperate and coordinate with other trades in executing work of this section as described hereunder.

1. Perform work so that progress of entire project, including work of other trades whether involved in work of this or other Sections, shall not be interfered with or delayed.

2. Obtain detailed information from manufacturers of equipment to be provided under this Section as to proper methods of installation.

3. Obtain final roughing dimensions or other information as needed for complete installation of all items furnished under other Sections or by Owner.

4. Notify the Engineer of location and extent of anything that interferes with the project. In coordination with and with approval of the Engineer, remedy situation to permit new work to be provided as required by Contract Documents.

B. Use of Premises: Use of premises shall be restricted as directed by the Engineer and as required below.

1. As required, during progress of work, remove and properly dispose of resultant dirt and debris, and keep premises clean. Upon completion of work, remove equipment and unused material provided for work, and put building and premises in neat and clean condition, and do cleaning required to provide acceptable appearance and operation of equipment, to satisfaction of the Engineer and Owner.

2. Conduct work so as not to interfere with functioning of existing equipment that is not included in this scope of work. Extreme care shall be observed to prevent debris from entering piping, vents, or air intakes.

C. Surveys and Measurements

1. A base measurement, both horizontal and vertical, on reference points shall be established by the Contractor who is responsible for correct laying out of the work.

2. In the event of discrepancy between actual measurements and those indicated, notify the Engineer in writing and do not proceed with work until the Engineer has issued written instructions.

3.8 PROTECTION OF PERSONS

A. As the construction will constitute an "attractive nuisance" in the legal sense, it shall be the sole responsibility of the Contractor to provide adequate and sufficient safeguards to prevent injury to the students, teachers, staff and others within the building and surrounding areas of the work site.

B. Specifically, the excavation cannot be left unattended or unguarded.

1. Provide physical barriers and signage to prevent access by unauthorized parties and to warn passers-by of potential danger.
2. Excavations may not remain open during weekends or holidays or when work is interrupted for more than 24 hours.
    a. Provide either temporary backfill or full coverage metal plates.
    b. Temporary backfill shall be removed and specified fill provided.

END OF SECTION

SECTION 02110

EXCAVATING & BACKFILLING

PART 1: GENERAL

1.1 REQUIREMENTS

A. Include the General Conditions of the Contract and Division-1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

D. Regulations: Comply with all applicable federal, state, and local laws and ordinances, and the requirements of listed agencies and utility companies.

1. Obtain and pay for all required permits, licenses, and certificates.

E. The contractor shall contact DIG-SAFE (1-888-344-7233) and follow normal procedures prior to commencing any excavation work at the site.

1.2 SCOPE OF WORK

A. Work under this Section consists of excavating the tank, backfilling the grave and restoring the site. This includes, but is not limited to the following:

1. Placement of bank gravel bedding and/or foundation material.
2. Restoration of bituminous concrete (asphalt) parking areas and curbing.
3. Restoration of landscaped areas.

B. Incidental materials necessary for the completion of this installation, and usually furnished in connection herewith, shall be furnished and installed whether or not specifically referenced.

PART 2: PRODUCTS

2.1 BANK GRAVEL

A. Bank gravel or other approved solid fill shall be used at the Engineer's discretion to backfill the trench.

B. The fill shall be composed of inorganic material, stone or sand, with particle sizes less than 1½ inches, nominal.

2.2 BITUMINOUS CONCRETE (ASPHALT)

A. Bituminous concrete areas of the driveway, parking lot and curbs excavated or damaged by this contractor during the performance of the Work shall be restored to original condition.

PART 3: EXECUTION

3.1 EXCAVATION

A. Perform Work in accordance with OSHA Excavation Standard 29CFR 1926.650-652, which establishes safety requirements for excavations.

3.2 BACKFILL

A. Voids shall be cleaned of contaminated soil, organic construction materials, debris and other undesirable material before backfill placement is begun.

B. Spread uniformly to a depth of twelve inches; compact the material. Continue filling in 12 inch lifts, mechanically compacting each layer to 95 percent maximum dry density as defined by ASTM D-1556, until the surface is no less than nine inches below finished grade.

C. No construction waste, wood, concrete or other debris may be used as backfill.

3.3 FIELD QUALITY CONTROL

A. FIELD COMPACTION TESTS SHALL BE MADE AT THE CONTRACTOR'S EXPENSE, IF THE ENGINEER SO DIRECTS.

3.4 BITUMINOUS CONCRETE (ASPHALT)

A. The bank gravel fill, compacted to 95 percent, shall be nine inches below the finished grade.

B. A six inch crushed stone base shall be placed and compacted on the bank gravel.

C. Two inches of asphalt binder shall be placed on the crushed stone and power rolled.

D. One inch of asphalt topping shall be placed on the binder course and power rolled.

E. The surface of the asphalt patch shall be level with the adjacent driveway.

F. Curbs, if any, shall be formed to match existing.

G. Painted lines, if any, shall be restored.

3.5 CLEANING

A. All excess excavated materials and fill shall be removed from the site.

3.6 SPECIAL INSTRUCTIONS

A. The contractor shall be responsible for keeping the access roads or areaways clear of all spillage from trucks hauling earthwork materials to or from the site.

B. Contractor shall provide and erect safety barricades as required.

END OF SECTION

SECTION 02821

CHAIN LINK FENCE AND GATES

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. All of the Contract Documents, including the General and Supplementary Conditions and Division 1 General Requirements, apply to the work of and are hereby made a part of this Section.

B. Examine all drawings and all other sections of the specifications for requirements therein affecting the work of this Section whether or not such work is specifically mentioned in this Section.

C. This section contains information that applies to all work performed under the contract and is hereby made a part of each specification section.

1.2 SECTION INCLUDES

A. Furnish and install the following:

1. Fence framework, fabric, and accessories for all chain link high fences.
2. Manual gates and all related hardware.

1.3 REQUIREMENTS

A. Comply with applicable requirements of the following standards and those others referenced in this Section. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.

1. ASTM (American Society of Testing and Materials):
   a. ASTM A 120 – Pipe, Steel, Black and Hot-Dipped Zinc Coated (Galvanized) Welded and Seamless, for Ordinary Uses.
   b. ASTM A 123 – Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products.
   c. ASTM A 153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
   d. ASTM C 94 - Ready-mixed Concrete.
   e. ASTM F 567 - Installation of Chain-Link Fence.
   f. ASTM F 668 - Poly (Vinyl Chloride) Coated Steel Chain Link Fence Fabric.
2. CLFMI (Chain Link Fence Manufacturers Institute): Product Manual.

1.4 SUBMITTALS

A. Submit the following:

1. Literature: Manufacturer's product data sheets, specifications, physical properties for each item furnished hereunder, including, but not limited to: fence fabric, posts, accessories, fittings and hardware.
2. Instructions: Manufacturer's installation instructions and post foundation anchor bolt templates.
3. Warranty: Provide sample copies of manufacturers' actual warranties for all materials to be furnished under this Section, clearly defining all terms, conditions, and time periods for the coverage thereof.
4. Shop drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components.

5. Selection samples: Sample card indicating Manufacturer's full range 'of colors available for selection by Architect.
6. Verification samples: 12 x 12 inch samples of fence fabric, illustrating construction and colored finish.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with CLFMI - Product Manual and Manufacturer's recommendations.

B. Perform work in accordance with ASTM F 567.

1.6 QUALIFICATIONS

A. Manufacturer, with a minimum of 3 years documented experience demonstrating previously successful work of the type specified herein.

PART 2: PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with the requirements specified herein, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

1. Allied Fence Manufacturing Company, Scranton PA.
2. American Chain Link Fence Company, Canton MA.
3. Anchor Fence Inc., Baltimore MD.
4. Cyclone Fence/USX Corp., Chicago IL.

2.2 COMPONENTS

A. General: Conform to CLFMI Product Manual.

B. Framing Components:

1. Nominal 6'-0" high fence.
    a. Line (intermediate) posts, 2-1/2” diameter, CLFMI classification type "I" round, one piece without joints.
    b. Terminal and corner posts: 2-1/2” diameter, CLFMI classification type "I" round.
    c. Gate posts: 2-1/2” diameter, CLFMI classification type “l” round.
    d. Top and brace rail: 1.66 inch diameter, CLFMI classification type II round, with plain end and sleeve coupled.
    e. Gate frame: 1.66 inch diameter CLFMI classification type II round, for fittings and truss rod fabrication.
2. Finish for framing components
    a. CLFMI classification type I components: hot dipped galvanized with a minimum average zinc coating of 1.8 oz./sqft meeting ASTM F-1083 for standard weight (Schedule 40) galvanized pipe.
    b. CLFMI classification type II components.
        1) External: zinc coating shall be Type B, zinc with polymer film, 0.90 ounces per square foot minimum zinc coating with a chromate conversion and verifiable polymer film.
        2) Internal coating: Type B, zinc 0.90 oz./ft.2 minimum or type D, zinc pigmented, 81% nominal coating with 0.30 mils minimum thickness.
        3) PVC coatings.

C. Fabric: Polyvinyl chloride coated over galvanized steel wire. ASTM A 668 Type 2B,7 mil thermally fused polyvinyl chloride over ASTM A641, 6 gage galvanized steel core wire, tensile strength 75,000 psi (517 Mpa), Class 1 coated weighing not less than 0040 ounces per square foot (122g/m2) of uncoated wire surface.

1. Mesh: Helically wound and woven, 2 inch (50 mm) mesh.
2. Polyvinyl chloride coating color: dark green or as otherwise selected by owner from Manufacturer's standard colors.

D. Grout: Ready mixed, non-metallic high strength controlled expansion grout of flowable consistency, conforming to ASTM C 1107 with minimum compressive strength of 8,000 pounds per square inch (55.2 MPa) at 28 days. Manufacturers offering similar products which may be considered as equal include the following:

1. Five Star Products, Inc., Fairfield CT, product "Five Star Grout."
2. Cormix Construction Chemicals, Dallas TX.
3. L&M Construction Chemicals, Omaha NE, Product: "Crystex."

E. Tension wire: 6 gage thick steel, single strand.

F. Ties: Aluminum alloy steel wire - PVC Coated; and/or stainless steel bandit ties, at the Landscape Architect's discretion.

2.3 ACCESSORIES

A. Fittings: Sleeve bands, clips, rail ends, tension bars, fasteners and fittings; galvanized steel.

B. Gate hardware: Lockable fork latch with gravity drop; two 180 degree heavy duty gate hinges per leaf and hardware for padlock.

C. All fixed component parts, such as post tops, bands, connectors, rail ends, gate hinges, and gate latches shall be vinyl coated on visible surfaces. Non-visible portions of steel or iron components not vinyl coated must be coated with a zinc coating of not less than 1.8 ounces of zinc per square foot of uncoated surface. All threaded parts shall be coated in the field with a vinyl base compound after installation.

D. Provide two brass locks to be used to secure the two gates, keyed alike. Provide 4 keys.

PART 3: EXECUTION

3.1 EXAMINATION

A. Inspect all surfaces and verify that they are in proper condition to receive the work of this Section.

B. Beginning of installation means acceptance of existing and project conditions.

3.2 INSTALLATION

A. Set intermediate, gate, corner and terminal posts plumb, in bored holes in ground. Minimum depth: 24”.

B. Brace each gate and corner post to adjacent line post with horizontal center brace rail. Install brace rail, one bay from end and gate posts.

C. Provide top rail through line post tops and splice with 6 inch long rail sleeves.

D. Stretch fabric between terminal posts or at intervals of 100 feet maximum, whichever is less.

E. Position bottom of fabric 2 inches above finish grade.

F. Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.

G. Attach fabric to end, corner and gate posts with tension bars and tension bar clips.

H. Install bottom tension strap stretched taut between terminal posts.

I. Provide friction-fit caps for the tops of all posts.

3.3 TOLERANCES

A. Maximum variation from plumb or level: 1/4 inch.

B. Maximum offset from true dimensional alignment: 1 inch.

END OF SECTION

SECTION 02700

ASPHALT/CONCRETE PAVING

PART 1: GENERAL

1.1 GENERAL REQUIREMENTS

A. Include the General Conditions of the Contract and Division-1, General Requirements, as part of this Section.

B. Examine all other Sections of the Specifications for requirements that affect work under this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work of this Section with that of all other trades affecting, or affected by, this Section. Cooperate with such trades to assure the steady progress of all work under the contract.

D. Regulations: Comply with all applicable federal, state, and local laws and ordinances, and the requirements of listed agencies and utility companies.

1. Obtain and pay (if required) for all required permits, licenses, and certificates.

1.2 SCOPE OF WORK

A. Provide all labor, materials, equipment and services necessary to complete the work of this Section as specified herein, as shown on the drawings, or both.

B. The work of this Section includes, but is not limited to the following:

1. Gravel base course construction
2. Patching and resurfacing disturbed paved areas. .
3. Sealcoating existing pavement

1.3 RELATED WORK

A. Carefully examine all of the drawings and other Sections of the Specifications for requirements which affect, or are affected by the work of this Section.

B. The following related items of work are not included in this Section, and are specified under the designated Sections listed.

1. Section 02200 – Earthwork
2. Section 02110 – Excavating and Backfilling

1.4 SUBMITTALS

A. Material Certificates: Submit material certificates signed by material producer and Contractor indicating that products comply with requirements. Provide master mix formula for bituminous pavement for Engineer's review and approval.

B. The Contractor shall submit samples for testing of materials from the borrow pit he intends to utilize for base course construction. No fill material shall be brought to the site until material is approved by the Engineer.

1.5 PROJECT CONDITIONS

A. Weather: Perform work only when existing and forecasted weather conditions are within the limits established by referenced standards. Perform work only when ambient temperature is forecasted to be at least 50 degrees Fahrenheit and when temperatures have not been below 35 degrees Fahrenheit for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess amount of moisture or is in a frozen state.

B. Bituminous paving shall not be applied until the Architect inspects and approves the finished compacted gravel base.

C. Construction methods, transportation and delivery of mixtures, spreading, finishing, compaction joints, etc. shall conform to Section 460 of the Massachusetts Department of Public Works Standard Specifications for Highways and Bridges unless otherwise specified herein.

D. Substrates: Proceed with work only when substrate construction and penetrating work is complete and base is dry.

E. Traffic Control: Maintain access for vehicular and pedestrian traffic as required and for other construction activities.

F. Grade Control: Establish and maintain required lines and elevations.

1.6 REGULATORY REQUIREMENTS

A. Strictly comply with applicable codes, regulations and requirements of authorities having jurisdiction.

1.7 QUALITY ASSURANCE

A. Bituminous concrete shall be prepared, mixed, transported, placed, compacted and finished in accordance with the requirements set forth in the latest edition of the "Standard Specifications for Highways and Bridges" (hereinafter referred to as "SSHB"), as published by the Massachusetts Highway Department.

B. After staking and laying out the work, and before beginning the work, the Contractor shall obtain Architects approval of layout and grades. The Architect reserves the right to make field adjustments.

1.8 TESTING

A. During the placing and rolling operation, repeated checks shall be made to ascertain the correct rate of application to provide the required compacted thickness. When required test holes shall be cut, one for each 1000 square yards of pavement, and the thickness checked. If any test hole shows a deficiency of more than one quarter (1/4) inch, six additional holes shall be cut, three each on lines at right angle to each other. Holes shall be spaced three feet from the original hole and three feet apart. The thickness of all seven shall be averaged.

B. If the average thickness is 'deficient from the specified thickness by one quarter (1/4) inch or more, the extent of the deficient area shall be corrected at the Contractor's expense.

C. Upon completion of testing, the Contractor shall properly fill all test holes by compacting a fine aggregate bituminous concrete for the full depth of the core. The finished surface shall be smooth.

1.9 COORDINATION

A. This Contractor shall coordinate with all other trades especially grading, curb installation, electrical and plumbing contractors, through the General Contractor in order to prevent covering up unfinished or uninspected work and loss of time or labor by mis-scheduling and to assure the steady progress of all work of the Contract. Any rework shall be done at no cost to the Owner.

1.10 LAYOUT AND GRADES

A. A Registered Land Surveyor or Registered Professional Engineer employed by the Contractor shall lay out all lines and grade work in accordance with the Contract Documents.

1.11 DISTURBING EXISTING PAVEMENT DURING CONSTRUCTION

A. Existing paved areas shall be protected from damage by construction activities to the extent possible. Where sections of the finished paved areas have to be removed, the edges shall be saw cut in all cases and patched as described herein under "Patching Existing Pavement".

B. Existing finished paved areas that require extensive cutting and patching or have become damaged and cannot be satisfactorily repaired by cutting and patching shall be resurfaced. These resurfaced areas shall be large enough to be applied by paving machines. Shape of these resurfaced areas shall be near and in rectangular patterns or shall

conform to the shape or edges of other adjacent surface improvements. Edges of resurfaced areas shall be saw cut and existing pavements shall be removed from a distance of two feet into areas to be resurfaced, so that now pavement can neatly blend into existing pavement showing no joints or imperfections. If the gravel base course has been disturbed, the Contractor shall remove the disturbed material, repair the existing gravel base and apply a new binder course as specified herein.

C. All paving beyond the project's property line shall be in accordance with the requirements of the authority having jurisdiction. Provide traffic control for any work within the City's Right-of-Way.

PART 2: PRODUCTS

2.1 MATERIALS AND PRODUCTS

A. Course Aqqreqates: Provide clean, sound, angular crushed stone, crushed gravel, complying with ASTM D 692-88. This material shall contain 75% light gray colored pieces.

B. Fine Aqqreqate: Provide sharp-edged natural sand or sand prepared from stone, gravel or combination thereof, complying with ASTM D 1073.

C. Bituminous Concrete Berms: Berms shall consist of Class I Bituminous Concrete, Type 1-1, Top Course conforming with the Job-Mix Formula given in Section M, paragraph M3.11.03, SSHB and in accordance with the details of design as shown on the Drawings. Asphalt content of mix formula for bituminous concrete berms shall be 6.0 - 9.0 percent by weight of total mix.

D. Tack Coat: Bituminous tack coat, where required, shall be diluted asphalt emulsion SS-1.

E. Protective Seal Coat Emulsion: Provide mineral-colloid-stabilized, emulsified coal-tar pitch suitable for use as weather-protective and asphaltic-solvent resistant coating over bituminous pavements. It shall exceed ASTM D 3320-74T and Federal Specifications R-P-355d.

2.2 MIXES

A. Provide Class I asphalt aggregate mixture in compliance with Section 460, Paragraph 460.40, SSHB and as follows:

1. Binder Course and Top Course: Provide Binder Course and Top Course conforming with the Job-Mix Formula given in Section M, paragraph M3.11.03, SSHB.

2. The Binder Course shall me a minimum of 2 inches thick. The aggregate for the binder course shall conform to the following gradation requirements

SIEVE SIZE	PERCENT PASSING
1 "	100
3/4"	80-100
1/2"”	55-75
#4	28-50
#8	20-38
#30	8-22
#50	5-15
#200	0-5
Bitumen % of mix	4.5-5.5

3. The Top Course shall be a minimum of 1 1/2 inches thick, but shall not be less than the thickness indicated on the Drawings. The surface tolerance after completion shall be 1/8 inch when measured in any direction with a 10ft. straightedge. The aggregate for the top course shall conform to the following gradation requirements:

SIEVE SIZE	PERCENT PASSING
5/8"	100
1/2"	95-100
3/8”	80-100

#4	50-76
#8	37-54
#30	17-29
#50	10-21
#200	2-7
Bitumen % of mix	5.5-7.0

PART 3: EXECUTION

3.1 INSTALLATION

A. Preinstallation examination required: The Installer of asphalt concrete shall examine the subbase and all related work, and the conditions under which this work is to be performed and notify the Contractor in writing of all deficiencies and conditions detrimental to the proper completion of their work. Beginning work means Installer accepts substrates, previous work, and conditions.

B. Reference Standards: Install asphalt concrete in strict compliance with Sections 460.60 through 460.68 of the Massachusetts Highway Department Standard Specifications, except where more restrictive requirements are specified.

C. Subbase Inspection: Do necessary grading in addition to that specified under Section 02200, Earthwork to bring sub-grade to required grades and sections for bituminous pavement base course construction. Tamp traces of trenches. Remove spongy and otherwise unsuitable material and replace with approved material. loosen exceptionally hard spots and recompact. Take every precaution to obtain a foundation of uniform bearing strengths. Any defects in this work shall be corrected under this Section at no additional cost to the Owner.

D. Gravel Base Course Preparation: shall consist of approved granular fill and placed on approved subgrade to the depth indicated and as specified under Section 02200, Earthwork. The surface of the gravel base shall be shaped to the cross section of the pavement. The start of work under this Section shall constitute acceptance of the foundation conditions to which this work is to be applied.

1. The gradation shall conform to Gravel Borrow as specified in Section 02200. Earthwork.
2. Gradation shall be determined by a mechanical wet sieve analysis and in accordance with ASTM D-422.
3. The gravel shall be spread in layers from self-spreading vehicles or with power graders of approved types, or by hand methods upon the prepared subgrade. The gravel shall be compacted to not less than 95 percent of the maximum dry density of the material as determined by the Method of Test for ASTM Designation D - 1557, Method D. Grading and compaction shall continue until the surface is even and true to the proposed lines and grades within a tolerance of 3/8" above or below the required cross sectional elevations and to a maximum irregularity not exceeding 3/8" under a ten foot line longitudinally. Any specific area which after being rolled, does not form a satisfactory, solid foundation shall be removed, replaced and recompacted. The gravel shall be spread and compacted in layers not exceeding 6 inches in compacted thickness. The Contractor shall furnish, set and maintain all line and grade stakes necessary to guide the automated grade control equipment.
4. Contractor shall maintain base course in an acceptable condition, protected from traffic, erosion and other elements until the surface is placed.
5. After the subgrade and/or existing pavement surfaces have been prepared as specified herein, the Contractor shall check all frames, covers, grates, water valve boxes and all miscellaneous castings that are located in the proposed pavement area to insure that all such items have. been accurately positioned and set to the proper slope and elevation. All covers and grates shall be set flush with the required finished pavement surface. No depressions or mounds will be permitted in the pavement to accommodate inaccuracies in the setting of these appurtenances. All corrective work deemed necessary by the Architect shall be done at the Contractor's expense.

E. Tack Coat: Apply tack coat to previously paved surfaces, surfaces abutting asphalt concrete, and between binder and top course layers at a rate of 0.05 gal/s.y. after thoroughly cleaning such surfaces of all foreign matter and

loose material. Surfaces shall be dry before the tack coat is placed. The tack coat shall be applied immediately prior to laying the new pavement.

F. Placing Mix: Paving shall be laid in two courses except as noted on the Drawings. The thickness of each course shall be as shown on the Drawings and measured in place after compaction. The first course shall De the Binder Course and the second course shall be Top Course as defined in "Table A" of Section M3.11.03 "Job-Mix Formula" of the SSHB. A minimum of two weeks shall pass between the installation of the binder course and top course.

1. Any unsatisfactory irregularities or defects remaining after the final compaction shall be corrected by removing and replacing with new material as specified, to form a true and even surface, All minor surface projections, joints and minor honeycombed surfaces shall be ironed out smoothly to grade, as directed.

2. No vehicular traffic or loads shall be permitted on the newly completed pavement until stability has been attained and the material has cooled sufficiently to prevent distortion of loss of fines.

G. Bituminous Concrete Berm: The bituminous concrete mixture shall be machine formed by a selfpowered curbing machine capable of extruding and compacting the mixture, free of honeycombs, to the line, grade and cross-section shown on the Drawings. The berms shall be installed on the Binder Course prior to the installation of the Top Course.

H. Rolling: Begin rolling mixture when asphalt concrete can bear weight of roller without excessive displacement. Roll at least three times and provide a smooth, compact, uniform surface free of roller marks. After first rolling repair displaced area as needed with additional hot material. Roll at least two additional times to thoroughly compact concrete to maximum density and to remove roller marks.

I. Tolerances: The finished surface of each hot-mixed asphalt course shall be tested for smoothness using a 10 foot straight edge applied parallel with and at right angles to the center line of the paved area. Surfaces exceeding the following tolerances within the 10 feet will not be accepted.

Binder Course: 1/4" Top Course: 3/16

J. Seal Coating: Thoroughly clean and repair existing paved surfaces prior to applying seal coat. Apply in accordance with manufacturer's recommendations.

K. Paint Stripping: Provide painted parking stripes and other pavement markings, as indicated. Clean surface to totally eliminate all loose material and dust. Apply paint in strict compliance with manufacturer's instructions and recommendations. Allow for proper curing of substrates before application of paints. Apply number of coats and dry film thickness as recommended by paint manufacturer. Apply paint with mechanical methods and templates to ensure uniform, straight lines and even line widths.

L. Temporary Pavement Markings: Provide Temporary Pavement Markings as shown on the Drawings, as required by the phased site work, and on binder course when the top course is not installed due to seasonal conditions or Contractor's schedule for material installation.

3.2 PATCHING EXISTING PAVEMENT

A. In areas on site where new pavement abuts existing pavement and/or where existing pavement requires patching due to removal of existing pavement for installation of work under this Contract, patching of existing pavement shall be as follows:

1. Sawcut the existing edge of pavement in a straight line at a 90 degree angle to the vertical in such a manner that all existing loose or cracked areas of pavement are removed.

2. Edges of existing pavement shall be painted with a thin coat of bitumen (RS-1) immediately before placing new pavement.

3. Asphalt shall be installed as specified herein. Smooth transition surfaces shall be provided where new pavement abuts existing paved surfaces.

B. All asphalt patching work within public right-of-ways shall be completed in accordance with the requirements of the authority having jurisdiction.

1. Provide traffic control for work within the public right-of-way.
2. All road surfaces shall be cut by an approved mechanical means before any excavation is started to insure against unnecessary damage to pavement.
3. Excavation shall be completed in a safe and workmanlike manner and is to create a minimum amount of obstruction to pedestrian and or vehicular traffic.
4. Gravel Borrow shall be used and placed on six inch layers and compacted to 96% of the maximum dry density by mechanical means.
5. Resurfacing:
    a. The work to be completed hereunder shall include the replacement of all existing bituminous pavements disturbed by the work. This shall include roadways, sidewalks, berms, driveways, parking lots and other paved areas encountered in the work. Resurfacing will not be strictly limited to those areas disturbed, when in the judgment of the Architect an expansion of the work is necessary for proper restoration and to those areas specifically shown on the Drawings.
    b. All work shall conform the requirements of the Massachusetts DPW, SSHB, latest edition. Specific gradations of mix will be as directed by the Town Engineer or Architect to suit the use intended.
    c. All cut joints at existing and new top pavement surfaces shall be sealed with bitumen and sand. This includes roadways, sidewalks, driveways, and all other pavements.

3.3 CLEANING, REPAIR AND PROTECTION

A. Three days after rolling, the finished pavement shall be tested. Any section that shows ponding, indentation, rutting or picking up shall be resurfaced at the Contractor's expense.

B. Provide temporary protection to ensure work is completed without dirt, stains, damage or deterioration at time of final acceptance. Clean up stains and spills as they occur. Remove protection and clean as necessary immediately before final acceptance review.

3.4 SEALCOATING

A. After the asphalt patch has cured sufficiently:
    1. Clean the entire driveway (mechanical brushing or air blower).
        a. Cut back encroaching grass.
        b. Chemically remove oil stains.
        c. Dig out grass and weeds in cracks.
    2. Fill all cracks (wider than 1”, use asphalt patching compound).

B. Ensure that no rain has fallen for 24 hours prior to application and not forecast for 48 hours after application.

C. Apply coal tar emulsion sealcoat as per manufacturer’s instructions.

D. Using suitable barricades, prevent use of affected surface for 48 hours.

3.5 GUARANTEE

A. The Contractor shall guarantee all pavement installations, including materials and workmanship, for a period of one year from the date of acceptance. The Contractor shall make interim repairs as necessary to maintain all paved areas in good, usable condition.

END OF SECTION

SECTION 13280

ASBESTOS ABATEMENT

PART 1: GENERAL

1.1 STANDARD REQUIREMENTS

A. Reference to Other Sections: The CONDITIONS OF THE CONTRACT and DIVISION 1 are hereby made part of this Section.

B. Regulations: Comply with all applicable federal, state, and local laws and ordinances, and the requirements of listed agencies and utility companies. Obtain and pay for all required permits, licenses, and certificates.

C. General Coordination: Examine all Drawings and other Sections of the Specifications for requirements, which affect the Work of this Section. Coordinate Work with that of other trades affecting, or affected by, Work of this Section. Cooperate with other trades to ensure the steady progress of the Work.

1.2 WORK INCLUDED

A. Provide asbestos abatement work at the Peirce Elementary School, 170 Temple Street, Newton, MA as indicated in this Section. Bidders are responsible for verifying quantities of asbestos-containing materials. The work includes but is not limited to

1. Boiler Room

   a. Remove and dispose of approximately 100 linear feet of ACM pipe/fitting insulation.

   b. Remove and dispose of approximately 175 square feet of ACM boiler and DHW receiver insulation.

   c. Drain, remove and dispose of 275 gallon fuel oil storage tank.

2. Boiler Demolition

   a. Boiler must be demolished under full containment.

   b. All metals (boiler tubes, metal plates, pipe, storage vessels, etc.) will be decontaminated.

   c. Envirotest Lab, Inc. (Westwood, MA) will then perform a visual inspection for any visible asbestos debris before removing any metals from inside containment.

   d. All material related to the boiler is assumed to be contaminated with asbestos and must be disposed of as asbestos-containing.

1.3 POTENTIAL ASBESTOS HAZARD

A. The disturbance or dislocation of asbestos-containing materials (ACM) may cause asbestos fibers to be released into the building's atmosphere, thereby creating a potential health hazard to workmen and building occupants.

1. Thus, to prevent ACM from becoming a hazard, the Contractor shall abate the ACM in the proper sequence of the project before the materials are disturbed by any renovation or demolition.

2. Apprise all workers, supervisory personnel, subcontractors and consultants who will be at the job site of the seriousness of the hazard and of proper work procedures, which must be followed.

B. Where in the performance of the work, workers, supervisory personnel, subcontractors, or consultants may encounter disturb, or otherwise function in the immediate vicinity of any identified asbestos-containing materials, take appropriate precautionary measures as necessary to protect all building occupants from the potential hazard of exposure to airborne asbestos. Such measures shall include the procedures and methods described herein, and compliance with regulations of applicable federal, state and local agencies.

C. Coordinate the actual abatement of asbestos with the Newton Fire Department to minimize, to the extent possible, interference with planned exercises.

1.4 PLAN OF ACTION

A. Prepare a detailed plan of the procedures proposed for use in complying with the requirements of this Section.

1. Include in the plan the location and layout of decontamination areas, the sequencing of asbestos work, the interface of trades involved in the performance of work, methods to be used to assure the safety of building occupants and visitors to the site, disposal plan including location of approved disposal site, and a detailed description of the methods to be employed to control pollution.

2. Expand upon the use of a portable HEPA ventilation system, closing out of the building's HVAC system, method of removal to prohibit visible emissions in work area, and packaging of removed asbestos debris.

3. The Fire Chief or designated alternate must approve the plan prior to commencement of work.

1.5 STOP WORK

A. If the Newton Fire Chief or his designated alternate presents a written stop work order; immediately and automatically stop all work.

1. Do not recommence work until authorized in writing by Owners Representative.

1.6 SUBMITTALS

A. Before the Start of Work: Submit the following to the Fire Chief or designated alternate for review. Do not begin work until these submittals are returned with Fire Chief or designated alternate's action stamp indicating that the submittal is returned for unrestricted use or final-but-restricted use.

1. Plan of Action: Submit a detailed plan of the procedures proposed as required by this section.

2. Contingency Plans: for emergency actions.

3. Telephone Numbers: and location of emergency services,

4. Notifications: sent to other entities at the work site.

5. Notifications: sent to emergency service agencies.

6. Resume of Supervisor for asbestos abatement

7. Accreditation and Certification: submit evidence in form of training course certificate of accreditation of Supervisor as an asbestos abatement supervisor and Workers as asbestos abatement workers. Also, submit applicable Massachusetts DLWD personnel certifications.

   a. All personnel also must carry certifications on-site.

   b. Personnel without such certificates may not perform any functions related to asbestos abatement.

8. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the Work including:

   a. State and Local Regulations: Submit copies of codes and regulations applicable to the work.

   b. Notices: Submit notices required by federal, state and local regulations together with proof of timely transmittal to agency requiring the notice.

   c. Permits: Submit copies of current valid permits required by state and local regulations.

   d. Licenses: Submit copies of all State and local licenses and permits necessary to carry out the work of this contract, including abatement contractor's Massachusetts Department of Labor and Work Force Development asbestos abatement contractor license.

9. Insurance certificates: Submit evidence of asbestos abatement contractor’s insurance coverage, as required by this document.

10. Asbestos Abatement Schedule: Provide proposed detailed schedule including work dates, work shift time, number of employees, dates of start and completion including dates of preparation work, removals and final inspection dates.

11. Indicate completion and Clearance of each Work Area in advance of the date established for Substantial Completion.

    a. Allow time for testing and other Fire Chief or designated alternate's procedures necessary for certification of Clearance and Substantial Completion.

12. Work Stages: Indicate important stages of construction for each major portion of the work, including testing and installation,

    a. Include indication of start and finish times for the following:

13. Preparation of the Work Area. Asbestos removal, Clearance testing.

14. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made, Issue the updated schedule concurrently with report of each meeting.

1.7 NOTIFICATIONS

A. Notify other entities at the job site of the nature of the asbestos abatement activities, location of asbestos-containing materials, requirements relative to asbestos set forth in these specifications and applicable regulations.

B. Notify emergency service agencies including fire, ambulance, police or other agency that may service the abatement work site in case of an emergency.

1. Notification is to include methods of entering work area, emergency entry and exit locations, modifications to fire notification or fire fighting equipment, and other information needed by agencies providing emergency services.

C. Notifications of Emergency: Any individual at the job site may notify emergency service agencies if necessary without effect on this Contract or the Contract Sum.

D. Notify Federal. state, and local agencies having jurisdiction over the work including:

1. ENVIRONMENTAL PROTECTION AGENCY

Send Written Notification and Fees as required by USEPA National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61, Subpart M) to the regional Asbestos NESHAPS Contact at least 10 days prior to beginning any work on asbestos-containing materials. Send notification to the following address:

REGION 1:
Asbestos NESHAPS Contact
Air Management Division
USEPA
JFK Federal Building
Boston, MA 02203
(617) 223-4872

Notification: Include the following information in the notification sent to the NESHAPS contact:

Name and address of owner or operator.

Description of the facility being demolished or renovated, including the size, age, and prior of the facility.

Nature of planned demolition or renovation and method(s) to be used.

Procedures to be used to comply with the requirements of USEPA National Emission Standards for Hazardous Air Pollutants (NESHAPS) Asbestos Regulations (40 CFR 61 Subpart M).

Name and location of the waste disposal site where the friable asbestos waste material will be deposited.

2. ENVIRONMENTAL PROTECTION AGENCY

Send written notification and pay fees, as applicable, as required by state and local regulations. prior to beginning any work on asbestos-containing materials. In Massachusetts, notify the Department of Environmental Protection and the Department of Labor And Work Force Development within 10 working days of beginning any asbestos abatement.

Notify the local Department of Health and the Fire Chief within 10 days of

beginning any asbestos abatement permits.

Permit: All asbestos containing waste is to be transported by an entity maintaining a current "Industrial waste hauler permit" specifically for asbestos-containing materials, as required for transporting of asbestos-containing materials waste to a disposal site.

1.8 CONTRACTOR QUALIFICATIONS

A. Licenses: The Contractor conducting asbestos abatement activities must maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the work of this contract, including a Massachusetts Department of Labor And Work Force Development license as an Asbestos Abatement Contractor.

B. Certifications: All personnel conducting asbestos abatement activities shall be certified by the Department of Labor And Work Force Development as Asbestos Abatement Workers and Asbestos Abatement Supervisors, as applicable, to their role on the project.

C. Insurance In addition to all other insurance coverage that is required as part of this Contract, Contractors asbestos abatement contractor shall maintain general liability insurance, with no exclusions for asbestos work. Insurance shall be occurrence form, with no "sunset clause", with minimum $1,000,000 limits,

1.9 DEFINITIONS AND STANDARDS - ASBESTOS ABATEMENT

A. Accredited or Accreditation (when referring to a person or laboratory): A person or laboratory accredited in accordance with section 206 of Title II of the Toxic Substances Control Act (TSCA).

B. Aerosol: A system consisting of particles, solid or liquid, suspended in air.

C. Air Lock: A mechanism or system of enclosures within the decontamination facility that does not allow air movement between clean and contaminated areas.

1. Consists of three-foot wide spaces between each of the sections of the decontamination chamber segregated by full polyethylene barriers.

D. Air Monitoring: The process of measuring the fiber content of a specific volume of air,

E. Amended Waters: Water to which a surfactant has been added to decrease the surface tension to 35 dynes or less.

F. Asbestos: The asbestos form varieties of serpentine (Chrysotile), riebeckite (Crocidolite), cumming tonite-grunerite, anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection both the asbestos form and non-asbestiform varieties of the above minerals and any of these materials that have been chemically treated and/or altered shall be considered as asbestos.

G. Asbestos-Containing Material (ACM): Any material containing more than 1% by weight of asbestos of any type or mixture of types.

H. Asbestos-Containing Building Material (ACMB: Surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a building.

I. Asbestos-Containing Waste Material: Any material, which is or is suspected of being or any material contaminated with an asbestos-containing material, which is to be removed from a work area for disposal.

J. Asbestos debris: Pieces of ACBM that can be identified by color, texture, or composition or means dust, if the dust is determined by an accredited inspector to be ACM.

K. Authorized Visitor: Architect/Engineer, local regulatory or The Owner, the Fire Chief or designated alternate, testing lab personnel, the emergency personnel or a representative of any federal, state and other agency having authority over the project.

L. Barrier: Any surface that seals off the work area to inhibit the movement of fibers.

M. Breathing Zone: A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches.

N. Ceiling Concentration: The concentration of an airborne substance that shall not be exceeded.

O. Decontamination Facility: A series of interconnected chambers, typically segregated by polyethylene barriers, that is used as the only means of worker ingress/egress to the work area. Interlocking barriers prevents contamination of areas outside the work area

P. Demolition : The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operations.

Q. Disposal Bag: A properly labeled S mil thick teak-tight plastic bags used for transporting asbestos waste from work and to disposal site.

R. Encapsulant A material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent release of fibers.

1. Bridging encapsulant: an encapsulant that forms a discrete layer on the surface of an in situ asbestos matrix.
2. Penetrating encapsulant: an encapsulant that is absorbed by the in situ asbestos matrix without leaving a discrete surface layer.
3. Removal encapsulant a penetrating encapsulant specifically designed to minimize fiber release during removal of asbestos-containing materials rather that for in situ encapsulation.

S. Encapsulation Treatment of asbestos-containing materials with an encapsulant.

T. Enclosure The construction of an airtight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.

U. Equipment Room: to the contaminated decontamination of a contained room or chamber positioned immediately contiguous work area environment used for removal of protective clothing and equipment.

V. Filter: A media component used in respirators to remove solid or liquid particles from the inspired air.

W. Friable Asbestos Material: Material that contains more than 1.0% asbestos by weight and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

X. Glovebag : A contained bag (typically constructed of 6 mil transparent polyethylene or polyvinyl chloride plastic) with inward projecting long sleeve gloves, which are designed to enclose an object from which an asbestos-containing material is to be removed.

Y. HEPA Filter: A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 microns in diameter.

Z. HEPA Filter Vacuum Collection Equipment (or vacuum cleaner): High efficiency particulate air filtered vacuum collection equipment with a filter system capable of collecting and retaining asbestos fibers. Filters should be of 99.97% efficiency for retaining fibers of 0.3 microns or larger.

AA. High-efficiency particulate air filter: (HEPA) refers to a filtering system capable of trapping and retaining 99.97 percent of all mono-dispersed particles 0.. 3 um in diameter or larger.

BB. Movable Object: An item of equipment or furniture in the work area that is not permanently secured and thus, can be removed out of the work area before beginning abatement.

CC. Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

DD. Negative Pressure Ventilation System: A pressure differential and ventilation system.

EE. Personal Monitoring: Sampling of the asbestos fiber concentrations within the breathing zone of an employee.

FF. Pressure Differential and Ventilation System: A local exhaust system, utilizing HEPA filtration capable of maintaining a pressure differential within the inside of the Work Area at a lower pressure than any adjacent area, and which cleans recirculated air or generates a constant air flow from adjacent areas into the Work Area,

GG. Protection Factor: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

HH. Respirator: A device designed to protect the wearer from the inhalation of harmful atmospheres.

II. Shower Room: A room or chamber between the clean room and the equipment room in the worker decontamination enclosure. The shower, with hot and cold or warm running water controlled at the tap, must be arranged for complete showering and decontamination.

JJ. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

KK. Time Weighted Average (TWA): The average concentration of a contaminant in air during a specific time period.

LL. Visible Debris: Any visually detectable particulate residue such as dust, dirt, or other extraneous material that may or may not contain asbestos,

MM. Visible Emissions: Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed un-combined water vapor.

NN. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with amended water or diluted removal encapsulant and afterwards thoroughly decontaminated or disposed of as asbestos-contaminated waste,

OO. Work Area: The area where asbestos-related work or removal operations are performed which is defined and/or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel.

1. Work area is a Regulated Area as defined by 29 CFR 1926.

1.10 CODES, REGULATIONS, AND STANDARDS - ASBESTOS ABATEMENT

A. CODES AND REGULATIONS

Federal Requirements: which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:
OSHA: U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:
Respiratory Protection
Title 29, Part 1910, Section 134 of the
Code of Federal Regulations

Construction Industry
Title 29, Part 1926, of the
Code of Federal Regulations
Hazard Communication
Title 29, Part 1910, Section 1200 of the
Code of Federal Regulations

DOT: U. S. Department of Transportation, including but not limited to:
Hazardous Substances
Title 29, Part 171 and 172 of the
Code of Federal Regulations

EPA: U. S. Environmental Protection Agency (EPA), including but not limited to:

Asbestos Abatement Projects; Worker Protection Rule
Title 40 Part 763, Sub-part G of the

Code of Federal Regulations
Asbestos Hazard Emergency Response Act (AHERA) Regulation
Asbestos Containing Materials in Schools Final Rule & Notice
Title 40, Pan 763, Sub-part E of the
Code of Federal Regulations
Training Requirements of (AHERA) Regulation
Asbestos Containing Materials in Schools Final Rule & Notice
Title 40, Part 763, Sub-pan E, Appendix C of the
Code of Federal Regulations
National Emission Standard for Hazardous Air Pollutants (NESHAPS)
National Emission Standard for Asbestos
Title 40, Part 61, Sub-part A,
and Sub-part M (Revised Sub-part B) of the
Code of Federal Regulations

State Requirements: which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

Department of Environmental Protection (310 CMR 7.00)

Department of Labor And Work Force Development (453 CMR 6.00- The Removal, Containment or Encapsulations of Asbestos)

Department of Transportation

Local Requirements: which govern asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:

Town of Lunenburg Department of Health (project notification)

Local Police Department (project notification)

City Of Lunenburg Fire Department (project notification)

B. STANDARDS

General Applicability of Standards: Except to the extent that more explicit or more stringent requirements are written directly into the Contract Documents, all applicable standards have the same force and effect (and are made a part of the Contract Documents by reference) as if copied directly into the Contract Documents, or as if published copies are bound herewith.
Contractor Responsibility: The Contractor shall assume full responsibility and liability for the compliance with all standards pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. Standards: which apply to asbestos abatement work or hauling and disposal of asbestos waste materials include but are not limited to the following:
American National Standards Institute (ANSI)
1430 Broadway
New York, New York 10018
(212) 354-3300

Practices for Respiratory Protection Publication Z88.2-80
American Society for Testing and Materials (ASTM)
1916 Race Street
Philadelphia, PA 19103
(215) 299-5400

Safety and Health Requirements Relating to Occupational Exposure to Asbestos
E 849-82

EPA Guidance Documents: discuss asbestos abatement work or hauling and disposal of asbestos waste materials listed below for the Contractors information only. These documents do not describe the work and are not a part of

the work of this contract. EPA maintains an information number (800) 334-8571, publications can be ordered from (800) 424-9065 (554-1404 in Washington, DC):

Guidance for Controlling Asbestos-Containing Materials in Buildings (Purple Book) EPA 560/5-85-024

Asbestos in Buildings: Guidance for Service and Maintenance Personnel. EPA 560/5-85-018.

Asbestos Waste Management Guidance. EPA 530-SW-85-007

A Guide to Respiratory Protection for the Asbestos Abatement Industry. EPA-560-OPTS-86-001.

C. POSTING AND FILING OF REGULATIONS

Posting and Filing of Regulations: Post all notices requires by applicable federal, state and local regulations.

1. Maintain two (2) copies of applicable federal, state and local regulations and standard. Maintain one copy of each at job site. Keep on file in Contractor's office one copy of each air monitoring - test laboratory services

D. NOT IN CONTRACT SUM: This section describes work being performed by the Owner. This work is not in the Contract Sum.
This section describes air monitoring carried out by the owner to verify that the building beyond the work area and the outside environment remains uncontaminated. This section also sets forth airborne fiber levels both inside and outside the work area as action levels, and describes the action required by the Contractor if an action level is met or exceeded
Air monitoring required by OSHA is work of the Contractor and is not covered in this section.

E. WORK AREA ISOLATION: The purpose of the Owner's air monitoring is to detect faults in the work area isolation such as:

1. Contamination of the building outside of the work area with airborne asbestos fibers, Failure of filtration or rupture in the differential pressure system, Contamination of air outside the building envelop airborne asbestos fibers.

Should any of the above occur, immediately cease asbestos abatement activities until the fault is corrected.

Do not recommence work until authorized by the Fire Chief or designated alternate.

F. WORK AREA AIRBORNE FIBER COUNT: The Owner will monitor airborne fiber counts in the Work Area. The purpose of this air monitoring will be to detect airborne asbestos concentrations, which may challenge the ability of the Work Area isolation procedures to protect the balance of the building or outside of the building from contamination by airborne fibers.

G. WORK AREA CLEARANCE: To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the Owner will sample and analyze air samples in accordance with the requirements of 40 CFRPart 763.

1. AGGRESSIVE SAMPLING:

All Air Samples will be taken using aggressive sampling techniques as follows:

Before sampling pumps are started the exhaust from forced-air equipment (leaf blower with an approximately 1 horsepower electric motor) will be swept against all walls, ceilings, floors, ledges and other surfaces in the room.. This procedure will be continued for 5 minutes per 10,000 cubic feet of room volume.

One 20 inch diameter fan per 10,000 cubic feet of room volume will be mounted in a central location at approximately 2 meters above floor, directed toward ceiling and operated at low speed for the entire period of sample collection.

Air samples will be collected in areas subject to normal air circulation away from room corners, obstructed locations, and sites near windows, doors of vents,

After air-sampling pumps have been shut off, fans will be shut off.

2. SCHEDULE OF AIR SAMPLES:

General: The number and volume of air samples taken and analytical methods used by the Owner will be in accordance with the following schedule. Sample volumes given may vary depending upon the analytical instruments used.

3. TRANSMISSION ELECTRON MICROSCOPY:

In each homogeneous Work Area after completion of all cleaning work, a minimum of 13 samples will be taken and analyzed as follows:

Location Samples	Number of Samples	Filter Media	Detection Limit Fibers/CC	Minimum Volume (liters)	Rate LPM
Each Work Area	5	Polycarbonate	0.005	1200	1-10
Outside Work Area	5	Polycarbonate	0.005	1200	1-10
At Job Site	2	Polycarbonate	0.005	0	0
At Laboratory	1	Polycarbonate	0.005	0	0

Analysis: Asbestos fibers on each filter will be measured using the level 1 Analysis per EPA Provisional Method and Update (USEPA 1977, Yamate 1984). Direct Transfer: The Method of sample preparation to be used if possible.

Split Sample: One work area sample preparation will be split and both halves analyzed separately for duplicate analysis.

Release Criteria: Decontamination of the work site is complete if the average fiber concentration of the work area is not statistically larger than the average of the outside samples for each homogeneous work area. If the average of the work area samples is statistically larger than the average of the outside samples then the decontamination is incomplete and the cleaning procedures shall be repeated as outlined in part 3.06 of this section.

4. LABORATORY TESTING:

PHASE CONTRAST MICROSCOPY:
The services of a testing laboratory will be employed by the Owner to perform laboratory analysis of the air samples. A microscope and technician will be set up at the job site, so that verbal reports on air samples can be obtained immediately. A complete record, certified by the testing laboratory, of all air monitoring tests 'and results will be furnished to the Fire Chief or designated alternate, the Owner and the Contractor.

TRANSMISSION ELECTRON MICROSCOPY
Samples will be sent by overnight courier for analysis by Transmission Electron Microscopy. Samples will not be carried on weekends, so that samples shipped on Friday will arrive on the following Monday. Verbal results will normally be available during the 2nd working day after receipt of samples by the laboratory. The laboratory is capable of analyzing a maximum of 13 such samples from this project at any one time. All Transmission Electron Microscopy results will be available to the Contractor.

H. Stop Action Levels

1. Inside Work Area: Maintain an average airborne count in the Work Area of less than 0.5 fibers per cubic centimeter, If the fiber counts rise above this figure for any sample taken, revise work procedures to lower fiber counts. If the Time Weighted Average (TWA) fiber count for any work shift or 8 hour period exceeds 0.5 fibers per cubic centimeter, stop all work, leave Pressure Differential System in operation and notify Fire

Chief or designated alternate. After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by Fire Chief or designated alternate

If airborne fiber counts exceed 1.0 fibers per cubic centimeter for any period of time cease all work except corrective action until fiber counts tall below 0.5 fibers per cubic centimeter and notify Fire Chief or designated alternate. After correcting cause of high fiber levels, do not recommence work for 24 hours unless otherwise authorized, in writing, by Owners Representative.

2. OUTSIDE WORK AREA: If any air sample taken outside of the Work Area exceeds the base line established below, immediately and automatically stop all work except corrective action. The Fire Chief or designated alternate will determine the source of the high reading and so notify the Contractor.

   If the high reading was the result of a failure of Work Area isolation measures initiate the following actions:

3. Immediately erect new critical barriers to isolate the balance of the building Erect Critical Barriers at the isolation of the involved space (e.g. wall, ceiling, floor) affected area from the next existing structure.

4. Decontaminate the affected area in accordance with the requirements of Part 3.06 of this Section.

5. Require that respiratory protection be worn in affected area until area is cleared for re-occupancy in accordance with Work Area Clearance requirements.

6. Leave Critical Barriers in place until completion of work and insure that the operation of the pressure differential system in the Work Area results in a flow of air from the balance of the building into the affected area.

7. After Certification of Visual Inspection in the Work Area remove critical barriers separating the work area from the affected area. Final air samples will be taken within the entire area as set forth herein.

8. If the high reading was the result of other causes initiate corrective action as determined by the Fire Chief or designated alternate.

I. Effect on Contract Sum: Complete corrective work with no change in the Contract Sum if high airborne fiber counts were caused by Contractors activities.

J. Analytical Methods:

1. The Owner in analyzing filters used to collect air samples will use the following methods. Sampling rates may be varied from printed standards to allow for high volume sampling.

   Phase Contrast Microscopy (PCM) will be performed using the NIOSH 7400 method. This analysis will be carried out at the job site.

   Transmission Electron Microscopy (TEM) will be performed using the method specified in 40 CFR Part 763 Final Rule (AHERA)

TEMPORARY PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM

K. Continuously monitor and record the pressure differential between the Work Area and the building outside of the Work Area with a monitoring device.

1.11 WORKER TRAINING

A. AHERA Accreditation; All workers who conduct asbestos abatement work on friable ACM, are to be accredited as Abatement Workers as required by the AHERA regulation 40 CFR 763 Appendix C to Subpart E, June 30, 1987.

B. State and Local License; All workers are to be trained, certified and accredited as required by state or local code or regulation.

C. State and Local License: Submit evidence that all workers have been trained certified and accredited as required by state or local code or regulation.

D. Report from Medical Examination: conducted within last 12 months as part of compliance with OSHA medical surveillance requirements for each worker who is to enter the Work Area. Submit, at a minimum, for each worker the following:

1. Name and Worker Identification number.
2. Physician's Written Opinion from examining physician including at a minimum the following:
3. Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
4. Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
5. Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
6. Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.

PART 2: PRODUCTS

2.1 HEPA FILTERED FAN UNITS:

A. General: Supply the required number of HEPA filtered fan units to the site in accordance with these specifications. Use units that meet the following requirements.

B. Cabinet: Constructed of durable materials able to withstand damage from handling and transportation.

1. The width of the cabinet should be less than the fit through standard-size doorways.
2. Provide units whose cabinets are:
3. Factory-sealed to prevent asbestos-containing dust from being released during use; transport, or maintenance.
4. Arranged to provide access to and replacement of all air filters from intake end mounted on casters or wheels.

C. Fans: Rate capacity of fan according to usable air-moving capacity under actual operating conditions.

D. HEPA Filters: Provide units whose final filter is the HEPA type with the filter (folded into closely pleated panels) completely sealed on all edges with a structurally rigid frame.

E. Provide units with a continuous rubber gasket located between the filter and the filter housing to form a tight seal.

F. Provide HEPA filters that are individually tested and certified by the manufacturer to have an efficiency of not less than 99.97 percent when challenged with 0.3 ppm dioctylphthalate (DOP) particles when tested in accordance with Military Standard Number 282 and Army Instruction Manual 136-300-175A. Provide filters that bear a UL586 label to indicate ability to perform under specified conditions.

G. Provide filters that are marked with: the name of the manufacturer, serial number, airflow rating, efficiency and resistance, and the direction of test airflow.

H. Provide units with prefilters and intermediate filters installed either on or in the intake grid of the unit and held in place with special housings or clamps.

I. Prefilters: which protect the final filter by removing the larger particles, are required to prolong the operating life of the HEPA filter. Two stages of prefiltration are required. Provide units with the following prefilters:

1. First-stage prefilter: low-efficiency type (e.g., for particles 100 um and larger).
2. Second-stage prefilter(or intermediate filter): medium efficiency (e.g., effective for particles down to 5 um)

J. Instrumentation: Provide units equipped with:

1. Magnehelic gauge or manometer to measure the pressure drop across filters and indicate when filters have become loaded and need to be changed.

2. A table indicating the usable air-handling capacity for various static pressure readings on the Magnehelic gauge affixed near the gauge for reference, or the Magnehelic reading indicating at what point the filters should be changed, noting Cubic Feet per Minute (CFM) air delivery at that point.

3. Elapsed time meter to show the total accumulated hours of operation

K. Safety and Warning Devices: Provide units with the following safety and warning devices:

1. Electrical (or mechanical) lockout to prevent fan from operating without a HEPA filter

2. Automatic shutdown system to stop fan in the event of a rupture in the HEPA filter or blocked air discharge.

3. Warning lights to indicate normal operation (green), too high a pressure drop across the filters (i.e., filter overloading) (yellow), and too low of a pressure drop (i.e., rupture in HEPA filter or obstructed discharge) (red).

4. Audible alarm if unit shuts down due to operation of safety systems

L. Electrical components: Provide units with electrical components approved by the National Electrical Manufacturers Association (NEMA) and Underwriter's Laboratories (UL). Each unit is to be equipped with overload protection sized for the equipment. The motor, fan, fan housing, and cabinet are to be grounded.

2.2 SHEET PLASTIC:

A. Polyethylene Sheet: Provide flame-resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-Resistant Textiles and Films.

1. Provide largest size possible to minimize seams, 6.0 mil thick, frosted or black as indicated.

B. Reinforced Polyethylene Sheet: Where plastic sheet constitutes the only barrier between the work area and the building exterior, 'provide translucent, nylon reinforced or woven polyethylene, laminated, flame resistant, polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6.0 mil thick, frosted or black as indicated.

2.3 MISCELLANEOUS MATERIALS:

A. Duct Tape: Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to stick aggressively to sheet polyethylene,

B. Spray Glues Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.

C. Wetting Materials: For wetting prior to disturbance of Asbestos-Containing Materials use either amended water or a removal encapsulant:

1. Amended Water: Provide water to which a surfactant has been added. Use a mixture of surfactant and water which results in wetting of the Asbestos-Containing Material and retardation of fiber release during disturbance of the material equal to or greater than that provided by the use of one ounce of a surfactant consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.

2. Removal Encapsulant: Provide a penetrating type encapsulant designed specifically for removal of Asbestos-Containing Material.

a. Use a material which results in wetting of the Asbestos-Containing Material and retardation of fiber release during disturbance of the material equal to or greater than that provided by water amended with a surfactant consisting of one ounce of a mixture of 50% polyoxyethylene ester and 50% polyoxyethylene ether in five gallons of water.

D. Disposal Bags: Provide 6 mil thick leak-tight polyethylene bags labeled as required for Disposal of Asbestos Containing Waste Material.

E. Fiberboard Drums: Provide heavy-duty leak tight fiberboard drums with tight sealing locking metal tops.

F. Paper board Boxes: Provide heavy-duty corrugated paperboard boxes coated with plastic or wax to retard deterioration from moisture.

1. Provide in sizes that will easily fit in disposal bags.

2.4 PROTECTIVE CLOTHING:

A. Coveralls: Provide disposable full-body coveralls and disposable head covers Tyvek or approved equal), and require that they be worn by all workers in the Work Area. Provide a sufficient number for all required changes, for all workers in the work area.

B. Boots: Provide work boots with non-skid soles, and where required by OSHA, foot protection, for all workers. Provide boots at no cost to workers. Paint uppers of all boots red with waterproof enamel. Do not allow boots to be removed from the Work Area for any reason, after being contaminated with asbestos-containing material. Dispose of boots as asbestos-contaminated waste at the end of the work.

C. Hard Hats: Provide head protection (hard hats) as required by OSHA for all workers, and provide 4 spares for use by Fire Chief or designated alternate, Project Administrator, and Owner. Label hats with same warning labels as used on disposal bags.. Require hard hats to be worn at all times that work is in progress that may potentially cause head injury. Provide hard hats of type with plastic strap type suspension. Require hats to remain in the Work Area throughout the work. Thoroughly clean, decontaminate and bag hats before removing them from Work Area at the end of the work.

D. Goggles: Provide eye protection (goggles) as required by OSHA for all workers involved in scraping, spraying, or any other activity which may potentially cause eye injury.

1. Thoroughly clean, decontaminate and bag goggles before removing them from Work Area at the end of the work.

E. Gloves: Provide work gloves to all workers and require that they be worn at all times in the Work Area Do not remove gloves from Work Area and dispose of as asbestos-contaminated waste at the end of the work,

2.5 AIR PURIFYING RESPIRATORS:

A. Filter Cartridges: Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color coded in accordance with ANSI Z228.2 (1980). In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.

B. Non-permitted respirators Do not use single use, disposable or quarter face respirators.

2.6 ADDITIONAL PROTECTIVE EQUIPMENT:

A. Respirators, disposable coveralls, head covers, and footwear covers shall be provided by the Contractor for the Owner, Owners Representative, Project Administrator, and other authorized representatives who may inspect the job site.. Provide two (2) respirators and six (6) complete coveralls and, where applicable, six (6} respirator filter changes per day.

PART 3: EXECUTION

3.1 TEMPORARY ENCLOSURE

A. GENERAL:

1. The work of this part is required for the removal of all types of ACBM, including both friable and non-friable materials, unless otherwise noted.

2. Work Area: the location where asbestos-abatement work occurs, It is a variable of the extent of work of the Contract. It may be a portion of a room, a single room, or a complex of rooms.

a. A "Work Area" is considered contaminated during the work, and must be isolated from the balance of the building, and decontaminated at the completion of the asbestos-control work.

3. Completely isolate the Work Area from other parts of the building so as to prevent asbestos-containing dust or debris from passing beyond the isolated area.

a. Should the area beyond the Work Area(s) become contaminated with asbestos-containing dust or debris as a consequence of the work, clean those areas in accordance with the procedures indicated in Part 1.12 of this Section.

b. Perform all such required cleaning or decontamination at no additional cost to owner,

4. Place all tools, scaffolding, staging, etc. necessary for the work in the area to be isolated prior to completion of Work Area isolation.

5. Remove all removable furniture that has been designated uncontaminated by the Contract Documents or Fire Chief or designated alternate.

a. Also remove uncontaminated equipment, and/or supplies from the Work Area before commencing work, or completely cover with two (2) layers of polyethylene sheeting, at least 6 mil in thickness, securely taped in place with duct tape.

b. Such furniture and equipment shall be considered outside the work area unless covering plastic or seal is breached.

6. Disable ventilating systems or any other system bringing air into or out of the Work Area.

a. Disable system by disconnecting wires, removing circuit breakers, by lockable switch or other positive means that will prevent accidental premature restarting of equipment.

7. Lockout power to Work Area by switching off all breakers serving power or lighting circuits in work area. Label breakers with tape over breaker with notation "DANGER CIRCUIT BEING WORKED ON".

a. Lock panel and have all keys under control of Contractor's Superintendent of Owner's designated Representative.

8. Lockout power to circuits running through work area wherever possible by switching off all breakers or removing fuses serving these circuits. Label breakers with tape over breaker with notation "DANGER CIRCUIT BEING WORKED ON."

a. Lock panel and have all keys under control of contractor's superintendent or owner's designated representative.

b. f circuits cannot be shut down for any reason, label at intervals 4'-O" on center with tags reading, "DANGER LIVE ELECTRIC CIRCUIT. ELECTROCUTION HAZARD."

c. Label circuits in hidden locations but which may be affected by the work in a similar manner.

B. EMERGENCY EXITS:

1. Provide emergency exits and emergency lighting as set forth below:

2. At each existing exit door from the Work Area. Provide the following means for emergency exiting:

a. Arrange exit door so that it is secure from outside the Work area but permits exiting from the Work Area.

b. Mark outline of door on Primary and Critical Barriers with luminescent paint at least 1" wide.

c. Hang a razor knife on a string beside outline.

d. Arrange Critical and Primary barriers so that they can be easily cut with one pass of razor knife. Paint words "EMERGENCY EXIT" inside outline with luminescent paint in letters at least one foot high and 2" thick.

3. Provide clearly visible/easily distinguished EXIT signs at each exit.

4. Provide battery-powered emergency lighting that switches on automatically in the event of a power failure.

C. CONTROL ACCESS:

1. Isolate the work area to prevent entry by building occupants into Work Area or surrounding controlled areas. Accomplish isolation by the following:

   a. Lock all doors into Work Area, or, if doors cannot be locked, chain shut. Cover any signs that direct emergency exiting, either outside or inside of Work Area to locked doors. Do not obstruct doors required for emergency exits from Work Area or from building.

   b. After receiving written authorization from the Fire Chief or designated alternate: construct partitions or closures across any opening into Work Area, Partitions are to be a minimum of 8 feet high.

   c. Fabricate partitions from 3-5/6", 25 gage metal studs or 2' X 4' wood studs with 1/2" gypsum board on both faces. Brace at 4'-0" on center.

2. Locked Access: Arrange Work Area so that the only access into Work Area is through lock able doors to personnel and equipment decontamination units.

   a. Install temporary doors with entrance type lock sets that are key lockable from the outside and always unlocked and operable from the inside. Do not use dead bolts or padlocks.

   b. Replace locksets or passage sets on doors leading to decontamination units with temporary locksets for duration of the project. Remove any dead bolts or padlocks; Use entry type locksets that are key one lockable from outside and always unlocked and operable from inside.

   c. Provide one key for each door to Owner, and Fire Chief or designated alternate and maintain one key in clean room of decontamination unit (3 total).

3. Visual Barrier: Where the Work Area is immediately adjacent to or within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 6 mil in thickness so that the work procedures are not visible to building occupants. Where this visual barrier would block natural light substitute frosted or woven rip-stop sheet plastic in locations approved by the Fire Chief or designated alternate.

4. Provide Warning Signs at each locked door leading to Work Area reading as follows:

Legend	Notation
KEEP OUT	**3" Sans Serif Gothic or Block**
BEYOND THIS POINT	**1" Sans Serif Gothic or Block**
ASBESTOS ABATEMENT WORK	**1" Sans Serif Gothic or Block**
IN PROGRESS	**1" Sans Serif Gothic or Block**
BREATHING ASBESTOS DUST MAY BE HAZARDOUS TO YOUR HEALTH	**14 Point Gothic**

Immediately inside door and outside critical barriers post an approximately 20 inch by 14 inch manufactured caution sign displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926:

LEGEND:

DANGER

ASBESTOS

CANCER AND LUNG DISEASE HAZARD
RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED
IN THIS AREA

D. ALTERNATE METHODS OF ENCLOSURE.

1. Alternate methods of containing the Work Area may be submitted to the Fire Chief or designated alternate for approval.

   a. Do not proceed with any such method(s) without approval of the Fire Chief or designated alternate.

E. RESPIRATORY AND WORKER PROTECTION
Before proceeding beyond this point in providing Temporary Enclosures:

1. Provide Worker Protection
2. Provide Respiratory Protection
3. Provide Personnel Decontamination Unit

F. CRITICAL BARRIERS:

1. Completely Separate the Work Area from other portions of the building, and the outside by closing all openings with sheet plastic barriers at least 6 ml in thickness, or by sealing cracks leading out of Work Area with duct tape.
2. Individually seal all ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, convectors and speakers, and other openings into the Work Area with duct tape alone or with polyethylene sheeting at least 6 mil in thickness, taped securely in place with duct tape.

   a. Maintain seal until all work including Project Decontamination is completed.

   b. Take care in sealing of lighting fixtures to avoid melting or burning of sheeting.

3. Provide Sheet Plastic barriers at least 6 mil in thickness as required to seal openings completely from the Work Area into adjacent areas.

   a. Seal the perimeter of all sheet plastic barriers with duct tape or spray cement,

4. Mechanically Support sheet plastic independently of duct tape or spray glue seals so that seals do not support the weight of the plastic.

   a. Following are acceptable methods of supporting sheet plastic barriers. Alternative support methods may be used if approved in writing by the Fire Chief or designated alternate.

5. Plywood squares 6" x 6" x 3/8" held in place with one 6d smooth masonry nail or electo-galvanized common nail driven through center of the plywood and duct tape on plastic so that plywood clamps plastic to the wall.

   a. Locate plywood squares at each end, corner and at maximum 4 feet on centers.

6. Nylon or polypropylene rope or wire with a maximum unsupported span of 10 feet, minimum 1/4" in diameter suspended between supports securely fastened on either side of opening at maximum 1 foot below ceiling.

   a. Tighten rope so that it has 2" maximum dip.

   b. Drape plastic over rope from outside Work Area so that a two-foot long flap of plastic extends over rope into Work Area.

   c. Staple or wire plastic to itself 1" below rope at maximum 6" on centers to form a sheath over rope.

   d. Lift flap and seal to ceiling with duct tape or spray cement. Seal loop at bottom of flap with duct tape.

   e. Erect entire assembly so that it hangs vertically without a shelf upon which debris could collect.

7. Provide Pressure Differential System per Part 3..05 L of this Section.
8. Clean housings and ducts of all over spray materials prior to erection of any Critical Barrier that will restrict access.

G. PREPARE AREA:

1. Scaffolding : If fixed scaffolding is to be used to provide access, HEPA vacuum and wet clean area prior to scaffolding installation.
2. Remove all electrical and mechanical items, such as lighting fixtures, clocks, diffusers, registers etc., which cover any part of the surface to be worked on.
3. Remove all general construction items such as cabinets, casework, door and window trim, moldings, ceilings, trim, etc., which cover the surface of the work as required to prevent interference with the work.
    a. Clean, decontaminate and reinstall all such materials, upon completion of all removal work with materials, finishes, and workmanship to match existing installations before start of work.
4. Clean all contaminated furniture, equipment, and or supplies with a HEPA filtered vacuum cleaner or by wet cleaning.
    a. Remove all movable objects out of the Work Area to a temporary storage location designated by the Owner.
5. Clean All Surfaces In Work Area with a HEPA filtered vacuum or by wet wiping prior to the installation of primary barrier.

H. PRIMARY BARRIER:

1. Protect building and other surfaces in the Work Area from damage from water and high humidity and from contamination from asbestos-containing debris, slurry or high airborne fiber levels by covering with a primary barrier as described below.
2. Sheet Plastic: Protect surfaces in the Work Area with two (2) layers of plastic sheeting on floors, ceilings and walls, or as otherwise directed on the Contract Drawings or in writing by the Fire Chief or designated alternate. Perform work in the following sequence:
    a. Cover Floor of Work Area with 2 individual layers of clear polyethylene sheeting, each at least 6 mil in thickness, turned up walls at least 12 inches.
    b. Form a sharp right angle bend at junction of floor and wall so that there is no radius, which could be stepped on causing the wall attachment to be pulled loose.
    c. Both spray-glue and duct tape all seams in floor covering.
    d. Locate seams in top layer six feet from, or at right angles to, seams in bottom layer.
    e. Install sheeting so that top layer can be removed independently of bottom layer.
3. Cover all wails and ceiling in Work Area including "Critical Barrier" sheet plastic barriers with two layers of polyethylene sheeting, at least 6 mil in thickness, mechanically supported and sealed with duct tape or spray-glue in the same manner as "Critical Barrier sheet plastic barriers.
    a. Tape all joints including the joining with the floor covering with duct tape or as otherwise indicated on the Contract Documents or in writing by the Fire Chief or designated alternate.
4. Stairs and Ramps: Do not cover stairs or ramps with unsecured sheet plastic. Where stairs or ramps are covered with plastic, provide 3/4" exterior grade plywood treads securely held in place, over plastic.
    a. Do not cover rungs or rails with any type of protective materials,
    b. Repair of Damaged Polyethylene Sheeting: Remove and replace plastic sheeting, which has been damaged by removal operations or where seal has tailed allowing water to seep between layers.
    c. Remove affected sheeting and wipe down entire area. Install new sheet plastic only when area is completely dry.

I. STOP WORK

1. If the Critical or Primary barrier falls or is breached in any manner stop work immediately.
    a. Do not start work until authorized in writing by the Fire Chief or designated alternate.

J. EXTERIOR ENCLOSURES

1. Construct exterior enclosures as a Critical Barrier as necessary to completely enclose the work.
   a. Fabricate from reinforced polyethylene sheeting and 2" x 4" wood framework.
   b. Attach to existing building components or brace as necessary for lateral stability.
   c. Construct walls to meet all state and local regulations for construction of temporary buildings.

K. PRESSURE DIFFERENTIAL ISOLATION

1. Isolate the Work Area from all adjacent areas or Systems of the building with a Pressure Differential that will cause a movement of air from outside to inside at any breach in the physical isolation of the Work Area.
2. Relative Pressure in Work Area: Continuously maintain the work area at an air pressure that is lower than that in any surrounding space in the building, or at any location in the immediate proximity outside of the building envelope.
   a. This pressure differential when measured across any physical or critical barrier must equal or exceed a static pressure of 0.02 inches of water.
   b. Install manometer and related tubing to continuously measure pressure differential.
3. Accomplish the pressure differential by exhausting a sufficient number of HEPA filtered fan units from the work area. The number of units required will depend on machine characteristics, the seal at barriers, and required air circulation.
4. The number of units will increase with increased make-up air or leaks into the Work Area.
5. Determine the number of units required for pressure isolation by the following procedure:
   a. Establish required air circulation in the work area, personnel and equipment decontamination units.
   b. Establish isolation by increased pressure in adjacent areas or as part of seals where required.
   c. Exhaust a sufficient number of units from the work area to develop the required pressure differential.
6. The required number of units is the number determined above plus one additional unit.
7. Vent HEPA filtered fan units to outside of building unless authorized in writing by Fire Chief or designated alternate.
   a. Mount units to exhaust directly or through disposable ductwork.
   b. Use only new ductwork except for sheet metal connections and elbows,
   c. Use ductwork and fittings of same diameter or larger than discharge connection on fan unit.
   d. Use inflatable, disposable plastic ductwork in lengths not greater than 100 feet.
   e. Use spiral wire-reinforced flex duct in lengths not greater than 50 feet.
   f. Arrange exhaust as required to inflate duct to rigidity sufficient to prevent flapping.
   g. If direction of discharge from fan unit is not aligned with duct use sheet metal elbow to change direction. Use six feet of spiral wire reinforced flex duct after direction change.
8. Isolation of return air intakes: Erect seals with an air space at doors to boiler room. Pressurize this space with HEPA-filtered air so that it is at a pressure greater than either the Work Area or stair tower.
   a. If necessary, fabricate seal by first sealing door with duct tape and 6-mil polyethylene.
   b. Construct a barrier from 1/2" CDX plywood supported by 2" X 4" wood studs at 16+' on centers.
   c. Space face of barrier a minimum of 3" from face of door, Seal barrier with 6-mil sheet plastic and tape.
   d. Use plywood and framing lumber that is treated to be fire resistant.

e. Pressurize space with exhaust from HEPA filtered fan unit.

f. Continuously maintain a pressure differential with this space a minimum of 0.02 inches of water higher in static pressure than any adjacent space.

g. Locate HEPA filtered fan unit outside of work area.

h. Fabricate a manifold as required to distribute air to individual spaces to be isolated.

i. Provide relief venting at unit as required to prevent shut down due to low airflow while still maintaining required air pressure.

9. Isolation of Window Spaces: Pressurize areas around windows with HEPA filtered air so that it is at a pressure greater than any adjacent work area.

a. Pressurize space with exhaust from HEPA filtered fan unit.

b. Continuously maintain a pressure differential with this space a minimum of 0.02 inches of water higher in static pressure than any adjacent work area.

L. AIR CIRCULATION IN THE WORK AREA

1. Air Circulation: For purposes of this section air circulation refers to either the introduction of outside air to the Work Area or the circulation and cleaning of air within the Work Area.

2. Air circulation in the Work Area is a minimum requirement intended to help maintain airborne fiber counts at a level that does not significantly challenge the work area isolation measures.

a. The Contractor may also use this air circulation as part of the engineering controls in his worker protection program.

3. Determining the Air circulation Requirements: Provide a fully operational air circulation system supplying a minimum of the following air circulation rate: 4 air changes per hour.

4. Add one (1) additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

M. EXHAUST SYSTEM:

1. Pressure differential isolation and air circulation in the Work Area are to be accomplished by an exhaust system as described below,

2. Exhaust all units from the Work Area to meet air circulation requirement of this section.

3. Location of HEPA Filtered Fan Units: Locate fan unit(s) so that makeup air enters work area primarily through decontamination facilities. and traverses Work Area as much as possible.

a. This may be accomplished by positioning the HEPA filtered fan unit(s) at a maximum distance from-the worker access opening or other makeup air sources.

4. Vent to Outside of Building, unless authorized in writing by the Fire Chief or designated alternate.

5. Decontamination Units: Arrange Work Area and decontamination units so that the majority of make up air comes through the Decontamination Units.

a. Use only personnel or equipment Decontamination Unit at any time and seal the other so that make up air passes through unit in use.

6. Supplemental Makeup Air Inlets: Provide where required for proper air flow through the Work Area in location approved by the Fire Chief or designated alternate by making openings in the plastic sheeting that allow air from outside the building into the Work Area.

a. Locate auxiliary makeup air inlets as far as possible from the fan unit(s) (e.g., on an opposite wall), off the floor (preferably near the ceiling), and away from barriers that separate the Work Area from occupied clean areas, Cover with flaps to reseal automatically if the pressure differential system should shut down for any reason, Spray flap and around opening with spray adhesive so that if flap closes meeting surfaces are both covered with adhesive.

b. Use adhesive that forms contact bond when dry.

N. CIRCULATION SYSTEM:

1. Pressure differential isolation and air circulation in the Work Area are to be accomplished by a recirculation system as described below.

2. Recirculate air in the Work Area through HEPA filtered fan units to accomplish air circulation requirements of this section.

3. Location of Fan Units: Locate HEPA filtered fan units so that air is circulated through all parts of the Work Area, and so that required pressure is maintained at all parts of Work Area geometry.

a. Move units as necessary so that in any location where asbestos-containing materials are being disturbed the discharge from one HEPA filtered fan unit is blowing contamination away from workers.

b. Direct airflow in these locations so that it is predominantly toward workers' backs at the breathing zone elevation.

O. USE OF THE PRESSURE DIFFERENTIAL AND AIR CIRCULATION SYSTEM

1. General: a dedicated minimum 115V-20A circuit shall service each unit with ground fault circuit interrupter (GFCI) supplied from temporary power supply installed by the Contractor's licensed electrician.

a. Do not use existing branch circuits to power fan units,

2. Testing the System; Test pressure differential system before any asbestos-containing material is wetted or removed..

a. After the Work Area has been prepared, the decontamination facility set up, and the fan unit(s) installed, start the unit(s) (one at a time).

b. Demonstrate operation and testing of pressure differential system to Fire Chief or designated alternate.

3. Demonstrate Condition of Equipment for each HEPA filtered fan unit and pressure differential monitoring equipment including proper operation of the following;

a. Squareness of HEPA Filter

b. Condition of Seals

c. Proper operation of all lights

d. Proper operation of automatic shut down if exhaust is blocked

e. Proper operation of alarms

f. Proper operation of Magnehelic gauge

g. Proper operation and calibration on pressure monitoring equipment

4. Demonstrate Operation of the pressure differential system to the Fire Chief or designated alternate will include, but not be limited to, the following:

a. Plastic barriers and sheeting move lightly in toward Work Area.

b. Curtain of decontamination units move lightly in toward Work Area.

c. There is a noticeable movement of air through the Decontamination Unit.

d. Use smoke tube to demonstrate air movement from Clean Room through Shower Room to Equipment Room.

e. Use smoke tubes to demonstrate a definite motion of air across all areas in which work is to be performed.

f. Use a differential pressure meter or manometer to demonstrate the required pressure differential at every barrier separating the Work Area from the balance of the building, equipment, ductwork or outside,

5. Modify the Pressure Differential System as necessary to demonstrate successfully the above.
6. Use of System During Abatement Operations
    a. Start fan units before beginning work (before any asbestos-containing material is disturbed).
    b. After abatement work has begun, run units continuously to maintain a constant pressure differential and air circulation until decontamination of the work area is complete.
    c. Do not turn off units at the end of the work shift or when abatement operations temporarily stop.
    d. Do not shut down air pressure differential system during encapsulating procedures, unless authorized by the Fire Chief or designated alternate in writing. Supply sufficient prefilters to allow frequent changes.
    e. Start abatement work at a location farthest from the fan units and proceed toward them.
    f. If electric power failure occurs, immediately stop all abatement work and do not resume until power is restored and fan units are operating again.
    g. At completion of abatement work, allow fan units during final cleaning sequence to remove airborne fibers that may have been generated during abatement work and cleanup and to purge the Work Area with clean makeup air.
    h. The units may be required to run for a longer time after decontamination, if dry or only partially wetted asbestos material was encountered during any abatement work.
7. Dismantling the System:
    a. When a final inspection and the results of final air tests indicate that the area has been decontaminated, fan units may be removed from the Work Area. B
    b. Before removal from the Work Area remove and properly dispose of prefilter, decontaminate exterior of machine and seal intake to the machine with 6-mil polyethylene to prevent environmental contamination from the filters.

3.2 WORKER PROTECTION AND DECONTAMINATION PROCEDURES

A. The work of this part if required for the removal or other abatement of all types of ACBM, including both friable and non-friable materials, unless otherwise noted.

B. Provide worker protection as required by the most stringent OSHA and/or(EPA standards applicable to the work. The following procedures are minimums to be adhered to regardless of fiber count in the Work Area.

C. Each time Work Area is entered remove all street clothes in the Changing Room of the Personnel Decontamination Unit and put on new disposable coverall, new head cover, and a clean respirator. Proceed through shower room to equipment room and put on work boots.

D. Require all workers to adhere to the following personal decontamination procedures whenever they leave the Work Area:

1. When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the equipment room.
2. Still wearing respirators, proceed to showers. Showering is mandatory. Care must be taken to follow reasonable procedures in removing the respirator to avoid asbestos fibers while showering.
    a. The following procedure is required as a minimum:
3. Thoroughly wet body including hair and face. If using a Powered Air-Purifying Respirator (PAPR) hold blower unit above head to keep canisters dry.
4. With respirator still in place thoroughly wash body, hair, respirator face piece, and all parts of the respirator except the blower unit and battery pack on a PAPR.
    a. Pay particular attention to seal between face and respirator and under straps.
5. Take a deep breath, hold it and/or exhale slowly completely wet hair, face, and respirator.

a. While still holding breath, remove respirator and hold it away from face before starting to breath.

6. Carefully wash face piece of respirator inside and out.

7. If using PAPR: shut down in the following sequence, first cap inlets to filter cartridges, then turn off blower unit (this sequence will help keep debris which has collected on the inlet side of filter from dislodging and contaminating the outside of the Limit).

a. Thoroughly wash blower unit and hoses.

b. Carefully wash battery pack with wet rag. Be extremely cautious of getting water in battery pack as this will short out and destroy battery.

8. Dispose of wet filters from air purifying respirator.

9. Shower completely with soap and water,

10. Rinse thoroughly.

11. Rinse shower room walls and floor prior to exit.

12. Proceed from shower to Changing Room and change into street clothes or into new disposable work clothes.

E. Within Work Area: Require that workers NOT eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the Work Area. To eat, chew, drink or smoke, workers shall follow the procedure described above then dress in street clothes before entering the non-Work Areas of the building.

3.3 RESPIRATORY PROTECTION

A. Respiratory Protection Program: Submit Contractor's written respiratory protection program manual as required by OSHA 1926.1101.

B. Respiratory Protection Schedule: Submit level of respiratory protection intended for each operation required by the project.

C. Historic Airborne Fiber Data: Submit airborne asbestos fiber count data from an independent air-monitoring firm to substantiate selection of respiratory protection proposed.

1. Data submitted shall include at least the following for each procedure required by the work:

a. Date of measurements

b. Operation monitored

c. Type and asbestos content of material being abated

d. Sampling and analytical methods used and evidence of their accuracy Number, duration, and results of samples taken.

D. Resume information: Submit resume and information on training for individual monitoring the operation of supplied air respiratory systems.

1. Submit training certifications where applicable.

E. Require that respiratory Protection be used at all times that there is any possibility of disturbance of asbestos-containing materials whether intentional or accidental.

F. Require that a respirator be worn by anyone in a Work Area at all times, regardless of activity, during a period that starts with any operation which could cause airborne fibers until the area has been cleared for re-occupancy in accordance with Part 1.12 of this Section.

G. Regardless of Airborne Fiber Levels: Require that the minimum level of respiratory protection used be half-face air-purifying respirators with high efficiency filters.

H. Do not allow the use of single-use, disposable, or quarter-face respirators for any purpose

3.4 FIT TESTING

A. Initial Fitting: Provide initial fitting of respiratory protection during a respiratory protection course of training set up and administered by a Certified Industrial Hygienist. Fit types of respirator to be actually worn by each individual. Allow an individual to use only those respirators for which training and fit testing has been provided.

B. On a Weekly Basis, check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube.

C. Upon Each Wearing: Require that each time an air-purifying respirator is put on it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions or ANSI Z88.2 (1980).

D. Type of Respiratory Protection Required:

1. Provide Respiratory Protection as indicated in accordance with OSHA requirements.

   a. In the event that an initial exposure assessment has previously been conducted, determine the proper level of protection by dividing the expected or actual airborne fiber count in the Work Area by the appropriate "protection factors" specified by OSHA for various types of respirators.

   b. The level of respiratory protection, which supplies an airborne fiber, level inside the respirator, at the breathing zone of the wearer, at or below the permissible exposure limit (PEL) is the minimum level of protection allowed.

E. Permissible Exposure Limit (PEL):

1. 8-Hour Time Weighted Average (TWA) of asbestos fibers to which any worker may be exposed shall not exceed 0.1 fiber/cc.

2. 8-Hour Time Weighted Average (TWA) and Ceiling Concentration of asbestos fibers based on a 30 minute period to which any worker may be exposed shall not exceed 1.0 fiber/cc.

3. Employees must assess all asbestos operations for their potential to generate airborne fibers. Employees must use exposure-monitoring data to assess employee exposures.

4. Fibers: For purposes of this section, fibers are defined as all fibers regardless of composition as counted in the OSHA Reference Method (ORM), or NIOSH 7400 procedure.

F. Types of Respirators:

1. Negative pressure - half or full face mask: Supply a sufficient quantity of respirator filters approved for asbestos, so that workers can change filters during the work day.

   a. Require that respirators be wet-rinsed, and filters discarded, each time a worker leaves the Work Area.

   b. Require that new filters be installed each time a worker enters the Work Area. Store respirators and filters at the job site in the changing room and protect totally from exposure to asbestos prior to their use.

2. Powered air purifying - half or full face mask: Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement.

   a. Require that regardless of flow, filter cartridges be replaced after 40 hours of use.

   b. Require that HEPA elements in filter cartridges be protected from wetting during showering.

   c. Require entire exterior housing of respirator, including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords, be washed each time a worker leaves the Work Area.

   d. Caution should be used to avoid shorting battery pack during washing.

   e. Provide an extra battery pack for each respirator so that one can be charging while one is in use.

3. Powered purifying Systems Monitor Continuously monitor the air system operation including compressor operation, filter system operation, backup air capacity and all warning and monitoring devices at all times that system is in operation.

a. Assign an individual, trained by manufacturer of the equipment in use or by a Certified Industrial Hygienist, in the operation and maintenance of the system to provide this monitoring.

b. Assign no other duties to this individual which will take him away from monitoring the air system.

3.5 DECONTAMINATION UNITS

A. Personnel Decontamination Unit

B. Provide a Personnel Decontamination Unit consisting of a serial arrangement of connected rooms or spaces, Clean Room, Shower Room, Equipment Room with airlocks between spaces.

a. Require all persons without exception to pass through this Decontamination Unit for entry into and exiting from the Work Area for any purpose.

b. Do not allow parallel routes for entry or exit.

c. Do hot remove equipment or materials through Personnel Decontamination Unit.

d. Provide temporary lighting within Decontamination Units as necessary to reach a lighting level of 100-foot candles.

C. Changing Room (clean room): Provide a room that is physically and visually separated from the rest of the building for the purpose of changing into protective clothing.

1. Construct using polyethylene sheeting, at least 6 mil in thickness, to provide an airtight seal between the Changing Room and the rest of the building.

2. Locate so that access to Work Area from Changing Room is through Shower Room.

3. Separate Changing Room from the building by a sheet plastic flapped doorway.

4. Require workers to remove all street clothes in this room, dress in clean, disposable overalls, and don respiratory protection equipment.

a. Do not allow asbestos-contaminated items to enter this room. Require Workers to enter this room either from outside the structure dressed in street clothes, or naked from the showers.

5. An existing room may be utilized as the Changing Room if it is suitably located and of configuration whereby workers may enter the changing room directly from the Shower Room.

a. Protect all surfaces of room with sheet plastic as set forth in Temporary Enclosures.

b. Authorization for this must be obtained from the Fire Chief or designated alternate in writing prior to start of construction.

6. Maintain floor of changing room dry and clean at all times. Do not allow overflow water from shower to wet floor in changing room.

7. Damp wipe all surfaces twice after each shift change with a disinfectant solution.

8. Provide posted information for all emergency phone numbers and procedures.

D. Airlocks: Provide an airlock between Clean Room and Shower Room and an airlock (3' minimum) between shower room and equipment room.

E. Shower Room: Provide a completely watertight operational shower to be used for transit by cleanly dressed workers heading for the Work Area from the Changing Room, or for showering by workers headed out of the Work Area after undressing in the Equipment Room.

1. Construct room by providing a shower pan and 2 shower walls in a configuration that will cause water running down walls to drip into pan.

a. Install a freely draining wooden floor in shower pan at elevation of top of pan.

2. Separate this room from the rest of the building with airtight walls fabricated of two layers of 6-mil polyethylene.

3. Provide showerhead and controls.

4. Provide temporary extensions of existing hot and cold water and drainage, as necessary for a complete and operable shower.

5. Provide a soap dish and a continuously adequate supply of soap and maintain in sanitary condition.

6. Arrange so that water from showering does not splash into the Changing or Equipment Rooms.

7. Arrange water shut off and drain pump operation controls so that a single individual can shower without assistance from either inside or outside of the Work Area.

8. Provide flexible hose shower head.

9. Pump waste water to drain or to storage for use in amended water, If pumped to drain, provide 20 micron and 5 micron waste water filters in line to drain or waste water storage. Change filters daily or more often if necessary.

   a. Locate filters inside shower unit so that water lost during filter changes is caught by shower pan.

10. Provide hose bibb.

F. Airlock: Provide an airlock (3' minimum) between Shower Room and Equipment Room. This is a transit area for workers. Separate this room from Equipment Room by a sheet plastic flap doorway.

1. Separate this room from the Equipment Room and Shower Room with airtight walls fabricated of two layers of 6 mil polyethylene and a sheet plastic flapped doorway.

G. Equipment Room (contaminated area): Require work equipment, footwear and additional contaminated work clothing to be left here.

1. This is a change and transit area for workers.

2. Separate this room from the rest of the building with airtight walls fabricated of two layers of 6 mil polyethylene.

3. Provide a drop cloth layer of sheet plastic on floor in the Equipment Room for every shift change expected.

   a. Roll drop cloth layer of plastic from Equipment Room into Work Area after each shift change.

   b. Replace before next shift change. Provide a minimum of two (2) layers of plastic at all times.

   c. Use only clear plastic to cover floors.

H. Decontamination Sequence: Require that all workers adhere to the following sequence when entering or leaving the Work Area.

1. Entering Work Area: Worker enters Changing Room and removes street clothing, puts on clean disposable overalls and respirator, and passes through the Shower Room into the Equipment Room.

2. Any additional clothing and equipment left in Equipment Room needed by the worker are put on in the Equipment Room.

3. Worker proceeds to Work Area.

I. Exiting Work Area:

1. Before leaving the Work Area, require the worker to remove all gross contamination and debris from overalls and feet.

   a. The worker then proceeds to the Equipment Room and removes all clothing except respiratory protection equipment.

   b. Extra work clothing such as boots, hard hats, goggles, gloves are to be stored in contaminated end of the Equipment Room.

   c. Disposable coveralls are placed in a bag for disposal with other material.

   d. Require that all individuals leaving the Work Area follow proper Decontamination procedures.

2. After showering, the worker moves to the Changing Room and dresses in either new coveralls for another entry or street clothes if leaving.

J. Equipment Decontamination Unit:

1. Provide an Equipment Decontamination Unit consisting of a serial arrangement of rooms, Clean Room, Holding Room, Wash Room for removal of equipment and material from Work Area.

   a. Do not allow personnel to enter or exit Work Area through Equipment Decontamination Unit.

2. Arrange with airlocks between rooms as required below:

   a. Wash Down Station: Provide an enclosed Shower Unit located in Work Area just outside Wash Room as an equipment, bag and container cleaning station.

   b. Fabricate waterproof floor extending 6' - 0" beyond Wash Down station in all directions. Install seamless waterproof membrane over area and extend over curbs on all four sides. Form curbs from 2" x 4" lumber laid on the flat

   c. Waterproof membrane shall be fabricated from elastomeric membrane or 10-mil polyethylene minimum.

   d. Do not allow water to collect on waterproof membrane. Remove continuously with a wet vacuum or mops.

3. Wash Room: provide washroom for cleaning of bagged or containerized asbestos containing waste materials passed from the Work Area.

   a. Construct washroom of nominal 2" x 4" wood framing and polyethylene sheeting, at least 6-mil in thickness and located so that packaged materials, after being wiped clean, can be passed to the Holding Room.

   b. Separate this room from the Work Area by a single flapped door of 6-mil polyethylene sheeting.

   c. Provide a drop cloth layer of plastic on floor in the Wash Room for every load-out operation. Roll this drop cloth layer of plastic from Wash Room into Work Area after each load out. Provide a minimum of two (2) layers of plastic at all times.

   d. Use only clear plastic to cover floors.

4. Airlock: Provide an airlock (4' minimum) between Wash Room and Holding Room. This is a transit area.

   a. Separate this room from adjacent spaces by a sheet plastic flapped doorway.

   b. Separate this room from the rest of the building and adjacent spaces with airtight walls fabricated of two layers of 6 mil polyethylene.

5. Holding Room: Provide Holding Room as a drop location for bagged asbestos-containing materials passed from the Wash Room.

   a. Construct Holding Room of nominal 2" x 4" wood framing and polyethylene sheeting, at least 6 mil in thickness and located so that bagged materials cannot be passed from the Wash Room through the Holding Room to the Clean Room.

   b. Separate this room from the adjacent rooms by flap doors fabricated from 6-mil sheet plastic.

6. Airlock: Provide an airlock (4' minimum) between Holding Room and Clean Room. This is a transit area.

   a. Separate this room from adjacent spaces by a sheet plastic flap doorway.

   b. Separate this room from the rest of the building and adjacent spaces with airtight walls fabricated of two layers of 6 mil polyethylene.

7. Clean Room: provide Clean Room to isolate the Holding Room from the building exterior. If possible, locate to provide direct access to the Holding Room from the building exterior.

   a. Erect Critical and Primary Rooms. If no space exists, then construct sheeting, at least 6 mil, in Barriers as described herein in an existing space.

b. Separate this room from the exterior by a single flap door of 6 mil polyethylene sheeting.

8. Load-out Area: The load-out area is the transfer area from the building to a truck or dumpster.

a. It may be the Clean Room of the Equipment Decontamination unit or a separate room or loading dock area.

b. Erect Critical and Primary barriers as described in Part 3.05 in load-out area.

c. During transfer of material from load-out area erect primary barriers as described in this section as necessary to seal path from load-out area to truck or dumpster.

K. Decontamination Sequence: Take all equipment or material from the Work Area through the Equipment Decontamination Unit according to the following procedure:

1. At wash down station, thoroughly wet clean contaminated equipment or sealed polyethylene bags and pass into Wash Room.

2. When passing equipment or containers into the Wash Room, close all doorways of the Equipment Decontamination Unit, other than the doorway between the Wash down Station and the Wash Room. Keep all outside personnel clear of the Equipment Decontamination Unit.

3. Once inside the washroom, wet clean the bags and/or equipment.

4. When cleaning is complete pass items into Holding Room. Close all doorways except the doorway between the Holding room and the Clean Room.

5. Workers from the building exterior shall enter Holding Area and remove decontaminated equipment and/or containers for disposal.

6. Require these workers to wear full protective clothing and appropriate respiratory protection.

7. At no time is a worker from an uncontaminated area to enter the enclosure when a removal worker is inside.

3.6 CONSTRUCTION OF THE DECONTAMINATION UNITS:

A. Walls and Ceiling: Construct airtight walls and ceiling using 2 layers (minimum) of polyethylene sheeting at least 6 mil in thickness.

1. Attach to existing building components or a temporary framework.

B. Floors: Use 2 layers (minimum) of 6 mil polyethylene sheeting to cover floors in all areas of the Decontamination Units.

1. Use only clear plastic to cover floors.

C. Flap Doors: Fabricated from three (3) overlapping sheets with openings a minimum of three feet (31) wide.

1. Configure so that sheeting overlaps adjacent surfaces.

2. Weigh sheets at bottom as required so that they quickly close after being released.

3. Put arrows on sheets to indicate direction of overlap and/or travel.

4. Provide a minimum of six feet (6') between entrance and exit of any room.

5. Provide a minimum of three feet (3') between doors to airlocks.

6. If the Decontamination area is located within an area containing friable asbestos on overhead ceilings, ducts, piping, etc., provide the area with a minimum 1/4 inch hardboard or 1/2 inch plywood "ceiling" with 2 layers, minimum, polyethylene sheeting, at least 6 mil in thickness covering the top of the "ceiling."

D. Visual Barrier: Where the Decontamination area is immediately adjacent to and within view of occupied areas, provide a visual barrier of opaque polyethylene sheeting at least 6 mil in thickness so that worker privacy is maintained and work procedures are not visible to building occupants.

1. Where the area adjacent to the Decontamination area is accessible to the public, construct a solid barrier on the public side of the sheeting to protect the sheeting.
2. Construct barrier with wood or metal studs covered with minimum 1 1/4" inch thick hardboard or 1/2 inch plywood. Where the solid barrier is provided, sheeting need not be opaque.
3. Alternate methods of providing Decontamination facilities may be submitted to the Fire Chief or designated alternate for approval.
   a. Do not proceed with any such method(s) without written authorization of the Fire Chief or designated alternate.

E. Electrical: Provide sub panel at Changing Room to accommodate all removal equipment.
1. Power sub panel directly from a building electrical panel..
2. Connect all electrical branch circuits in Decontamination unit and particularly any pumps in shower-room to a ground-fault circuit protection device.

3.7 CLEANING OF DECONTAMINATION UNITS:

A. Clean debris and residue from inside of Decontamination Units on a daily basis or as otherwise indicated on Contract Drawings.
1. Damp wipe or hose down all surfaces after each shift change. Clean debris from shower pans on a daily basis.

3.8 SIGNS:

A. Post an approximately 20 inch by 14 inch manufactured caution sign at each entrance to the Work Area displaying the following legend with letter sizes and styles of a visibility required by 29 CFR 1926.1101:

B. Provide signs in both English and Spanish:

LEGEND

DANGER

ASBESTOS

1) CANCER AND LUNG DISEASE HAZARD

RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA

C. Provide spacing between respective lines at least equal to the height of the respective upper line.

D. Post an approximately 10 inch by 14 inch manufactured sign at each entrance to each Work Area displaying the following legend with letter sizes and styles of a visibility at least equal to the following:

LEGEND	NOTATION
NO FOOD, BEVERAGES OR TOBACCO PERMITTED	3/4" Block
ALL PERSONS SHALL DON PROTECTIVE CLOTHING (COVERINGS) BEFORE ENTERING THE WORK AREA	3/4" Block
ALL PERSONS SHALL SHOWER IMMEDIATELY AFTER LEAVING WORK	3/4" Block

AREA AND BEFORE ENTERING THE CHANGING AREA

3.9 ASBESTOS REMOVAL

A. Wet Removal:

1. Thoroughly wet to satisfaction of Fire Chief or designated alternate Asbestos-Containing Materials to be removed prior to stripping to reduce fiber dispersal into the air, Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant.

   a. Saturate material sufficiently to wet to the substrate without causing excess dripping.

   b. Allow time for amended water or removal encapsulant to penetrate material thoroughly.

   c. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition.

   d. If a removal encapsulant is used, apply in strict accordance with manufacturer's written instructions.

2. Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels.

3. Remove intact, saturated Asbestos-Containing Material in small sections from all areas. Do not allow material to dry out. Lower ACM to ground-do not drop ACM from any height.

   a. As it is removed, simultaneously package material while still wet into disposal bags or other appropriate waste container.

   b. Twist neck of bags, bend over and seal with minimum three wraps of duct tape.

4. Evacuate air from disposal bags with a HEPA filtered vacuum cleaner before sealing.

B. Clean substrate from which ACM was removed by wet wiping and using a HEPA vacuum until no visible debris remains.

C. Encapsulation of substrate: Perform encapsulation of substrate to lockdown any non-visible fibers that may be remaining.

3.10 WORK AREA DECONTAMINATION

A. General: Decontamination of the Work Area following asbestos abatement.

1. If the asbestos abatement work is on damaged or friable materials the work is a three-step procedure with two cleanings of the Primary Barrier plastic prior to its removal and one cleaning of the room surfaces to remove any new or existing contamination.

   a. Unless specifically indicated otherwise all materials are considered damaged or friable for purposes of this section.

2. If the asbestos abatement work is on undamaged, non-friable materials that have not been rendered friable, the decontamination procedure is a two-step procedure with two cleanings of the Primary Barrier plastic to remove contamination, thus preventing contamination of the building when the Work Area isolation barriers are removed.

3. In both cases operation of the pressure differential system is used to remove airborne fibers generated by the abatement work.

B. Start of Work: Work of this part begins with the cleaning of the Primary Barrier. At start of work the following will be in place:

1. Primary Barrier: Two layers of polyethylene sheeting on floor and one layer on walls.

2. Critical Barrier: An airtight barrier between the Work Area and other portions of the building or the outside.

3. Critical Barrier Sheeting: Over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers and other openings. Decontamination Units: For personnel and equipment in operating condition.

4. Pressure Differential System: In operation.

C. First Cleaning: Carry out a first cleaning of all surfaces of the work area including items of remaining sheeting, tools, scaffolding and/or staging by use of damp-cleaning and mopping, and/or a High Efficiency Particulate Air (HEPA) filtered vacuum.

1. (Note: A HEPA vacuum may tail if used with wet material.)

2. Do not perform dry dusting or dry sweeping.

3. Use each surface of a cleaning cloth one time only and then dispose of as contaminated waste. Continue this cleaning until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces.

D. Remove All Filters in Air Handling System(s) and dispose of as asbestos-containing waste in accordance with requirements of Part 3.07 of this Section.

E. Wait 96 Air Changes to allow HEPA filtered fan units to clean air of airborne asbestos fibers.

1. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period.

2. Maintain Pressure Differential System in operation for the entire 96-air change period.

F. Second Cleaning: Carry out a second cleaning of all surfaces in the work area in the same manner as the first cleaning.

G. Encapsulation of substrate: Perform encapsulation of substrate at this time. Maintain Pressure Differential System in operation during encapsulation work.

1. Perform work only after meeting the following requirements:

a. Surfaces to be covered have met the requirements for a visual inspection in this section.

b. Airborne fiber counts in the Work Area are at or below 0.05 fibers per cubic centimeter as measured by phase contrast microscopy.

H. Removal of Primary Barriers:

1. Immediately following the second cleaning of the Primary plastic, remove all Primary Barrier sheeting and Material Decontamination Unit, if there is one, leaving only:

2. Critical Barrier: Which forms the sole barrier between the Work Area and other portions of the building or the outside.

3. Critical Barrier Sheeting: Over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers, and other openings.

4. Decontamination Unit: For personnel, in operating condition.

5. Pressure Differential System: Maintain in continuous operation.

I. Final cleaning: Carry out a final cleaning of all surfaces in the work area in the same manner as the first cleaning immediately after removal of Primary plastic.

1. This cleaning is now being applied to existing room surfaces. Take care to avoid watermarks or other damage to surfaces.

J. Contractor's Testing: At the completion of the above cleaning visually inspect all surfaces.

1. Reclean if any dust, debris, etc. is found.

2. At completion of this inspection sweep entire Work Area including walls, ceilings, ledges, floors and other surfaces in the Work Area with exhaust from forced-airequipment (leaf blower with approximately 1 horsepower electric motor or equivalent).

3. Do not direct forced-air equipment at any seal in any Critical Barrier.

4. If any debris or dust is found repeat the cleaning.

5. Continue this process until no debris dust or other material is found while sweeping of all surfaces with forced-air equipment.

K. Wait 48 Air Changes to allow HEPA filtered fan units to clean air of airborne asbestos fibers.

1. Use oscillating fans as necessary to assure circulation of air in all parts of work areas during this period.

2. Maintain pressure differential system in operation for the entire 48 air change period.

L. After Final Cleaning Perform a Complete Visual Inspection of the entire Work Area including: all surfaces, ceiling, walls, floor, decontamination unit, all plastic sheeting, seals over ventilation openings, doorways, windows, and other openings: look for debris from any sources, residue on surfaces, dust or other matter.

1. During visual inspection sweep entire work area including walls, ceilings, ledges, floors, and other surfaces in the room with exhaust from forced air equipment (leaf blower with approximately 1 horsepower electric motor or equivalent).

2. If any debris, residue, dust or other matter is found repeat final cleaning and continue decontamination procedure from that point.

3. When the area is visually clean, and if after sweeping of all surfaces with leaf blower, no debris, residue, dust or other material is found, complete the certification at the end of this section.

4. Visual inspection is not complete until confirmed in writing, on the certification, by Project Administrator.

M. Temporary lighting. Provide a minimum of 100-foot candles of lighting on all surfaces in the areas to be subjected to visual inspection.

1. Provide hand held lights providing 150 foot candles at 4 feet capable of reaching all locations in work area.

N. Final Air Sampling PCM and TEM:

1. After the work area is found to be visually clean, air samples will be taken and analyzed in accordance with the procedure for PCM or TEM, as applicable, set forth in Part 1.12 of this Section.

2. If Release Criteria are not met, repeat Final Cleaning and continue Decontamination Procedure from that point.

3. If Release Criteria are met, proceed to work of this Section on Removal of Work Area Isolation.

O. Encapsulation of substrate: Perform encapsulation of substrate or installation of spray-applied finishes or fireproofing, where required, before Removal of Work Area Isolation as specified below:

1. Maintain Pressure Differential System in operation during encapsulation work,

3.11 DISPOSAL OF ASBESTOS WASTE

A. Disposal Bags or Polyethylene Sheet Wrapping: Provide 12 mil thick, in total, leak-tight polyethylene bags or sheet wrapping, to contain all waste. On outermost layer, apply three labels with text as follows:

First Label:

CAUTION
CONTAINS ASBESTOS FIBERS
AVOID OPENING OR BREAKING CONTAINER
BREATHING ASBESTOS IS HAZARDOUS TO YOUR HEALTH

Second Label:

Provide in accordance with 29 CFR 1910.1200(f) of OSHA's Hazard Communication standard:

DANGER

CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
BREATHING AIRBORNE ASBESTOS, TREMOLITE, ANTHOPHYLITE, OR ACTINOLITE FIBERS IS HAZARDOUS TO YOUR HEALTH

Third Label:

Provide in accordance with U. S. Department of Transportation regulation on hazardous waste marking. 49 CFR parts 171 and 172. Hazardous Substances: Final Rule. Published November 21, 1986 and revised February 17, 1987:

RQ HAZARDOUS
SUBSTANCE,
SOLID, NOS,

2) ORM-E, NA 9188

(ASBESTOS)

B. Carefully load containerized waste in fully enclosed dumpsters, trucks or other appropriate vehicles for transport.

1. Exercise care before and during transport, to insure that no unauthorized persons have access to the material.
2. Do not store containerized materials outside of the Work Area.
    a. Take containers from the Work Area directly to a sealed truck or dumpster.
3. Do not transport disposal-bagged materials on open trucks.
    a. Label drums with same warning labels as bags.
    b. Uncontaminated drums may be reused.
    c. Treat drums that have been contaminated as asbestos containing waste and dispose of in accordance with this specification.

C. All waste is to be hauled by a waste hauler with all required licenses form all state and local authority with jurisdiction.

D. Dispose of all waste in a landfill that accepts asbestos waste materials.

1. Advise the landfill operator or processor, at least ten days in advance of transport, of the quantity of material to be delivered.

E. At disposal site unload containerized waste:

1. At a disposal site, sealed plastic bags may be carefully unloaded from the truck bags are broken or damaged; return to work site for re-bagging.
2. Clean entire truck and contents, as appropriate.

F. Retain receipts from landfill or processor for materials disposed of.

G. At completion of hauling and disposal of each load, submit copy of waste shipment record and landfill receipt to the Owner.

3.12 REMOVAL OF WORK AREA ISOLATION:

A. After all requirements of this Section and Work Area Clearance have been met:

1. Remove the Critical Barriers separating the Work Area from the rest of the building. Remove any small quantities of residual material found upon removal of the plastic sheeting with wet wiping, HEPA filtered vacuum cleaners and local area protection.
2. If significant quantities, as determined by the Fire Chief or designated alternate, are found then the entire area affected shall be decontaminated.

B. Remove all equipment, materials, debris from the work site.

C. Dispose of all asbestos-containing waste material as specified in Part 3.07 of this Section.

END OF SECTION

SECTION 16100

ELECTRICAL

PART 1: GENERAL

1.1 RELATED DOCUMENTS

A. This section supplements the General Requirements.

B. Consult the individual sections of the specifications for specific items required under those sections.

1.2 SCOPE OF WORK

A. The scope of work consists of the installation of all materials to be furnished under this Section, and without limiting the generality thereof, includes all equipment, labor and services required for the furnishing, delivering, and installing the principal items of work hereinafter and all items incidental thereto as specified herein and as shown on the drawings.

B. The itemization of work hereinafter specified does not in any way limit the responsibility to perform all work and furnish all the equipment, labor, and materials necessary for completion and satisfaction of operation of the installations described in the Specifications and shown on the Contract Drawings. In addition to the principal and miscellaneous items of work specifically mentioned and/or indicated, to be responsible for furnishing and installing all incidental and collateral materials such as supporting hardware for panelboards, conduit hangers, fastening devices, insulating tape and the like, which constitute essential components of the grade of Electrical Trade Practices and Workmanship acceptable to the Engineer.

1. Replacement of the existing 120/240 volt single phase main electric distribution panel.
2. Lighting panelboards.
3. Raceways.
4. Feeders and branch circuit wiring.
5. Wiring devices and device plates.
6. Drilling and coring.
7. Cutting and patching.
8. Fireproofing wall openings.
9. Sealing and waterproofing openings for conduit services through building foundations.
10. Nameplates and labels.
11. Outlet boxes.
12. New emergency generator, new automatic transfer switches, new emergency generator annunciator. and emergency power off switch (EPO).
13. Removal and disposal of the existing building generator, battery charger, automatic transfer switch and feeders.
14. Disconnect switches.
15. Junction boxes and pull boxes.
16. Wireways and wiring troughs.
17. Removal of existing electrical equipment as required under this contract.
18. Hangers and anchoring equipment.

19. Transformers.
20. Enclosed circuit breakers

1.3 RELATED WORK

A. The following work is not included in this Section and is to be performed under the designated Sections:

B. Charges for current consumed by the temporary light and power system for construction shall be paid by the Owner.

1.4 BREAKDOWN

A. The Contractor must submit a breakdown of his contract price to aid the Engineer in determining the value of work installed as the job progresses.

B. No requisition will be paid to The Contractor until after the breakdown is delivered to the Engineer.

C. Breakdown shall consist of, not less than the following items by building. The figure for each item shall include costs of material, labor, markup, and all other costs applicable to the item.

1. Emergency generator, automatic transfer switches, and annunciator.
2. Removal and disposal of the existing building generator, battery charger, automatic transfer switch and feeders.
3. Hangers and anchoring equipment.
4. Cutting, patching, drilling, coring, fireproofing and waterproofing.
5. Nameplates.
6. Panelboards and associated feeders.
7. Replacement of the existing single phase main distribution panel.

1.5 PRODUCT DATA SHEETS

A. Prepare and submit product data sheets of all equipment, labels, tags, and nameplates supplied under this Section of the Specifications to the Contractor for approval, as specified under General Conditions and Supplementary Conditions and Section 01300 Submittals. No work shall be done until product data sheets have been approved.

B. Shop drawings shall show plans, details, layouts and job conditions and relationship to other work.

1.6 RECORD DRAWINGS "AS-BUILTS"

A. Prepare, maintain and submit record drawings "As-Built."

1.7 OPERATING INSTRUCTIONS AND MAINTENANCE MANUALS

A. The Contractor shall instruct to the Owner's satisfaction, such persons as the Owner designates in the proper operation and maintenance of the systems and their parts.

B. Furnish in accordance with provisions under "Special Conditions" operating and maintenance manuals and forward same to the Engineer.

C. The operating instructions shall be specific for each system and shall include copies of posted specific instructions.

D. For maintenance purposes, provide shop drawings, parts lists, specifications, and manufacturer's maintenance bulletins for each piece of equipment. Provide name, address, and telephone number of the manufacturer's representative and service company, for each piece of equipment so that service or spare parts can be readily obtained.

1.8 SAMPLES

A. Submit samples as requested by the Engineer of all materials specified herein in accordance with General Condition and Supplementary Conditions, and before ordering materials obtain approval from the Engineer.

1.9 LAWS, ORDINANCES, CODES AND PERMITS

A. The Contractor shall give all necessary notices, obtain all permits, and pay all taxes, fees and other costs in connection with his work; file all necessary plans, prepare all necessary documents and obtain all necessary approvals of state authorities, all local, town, city, or county departments having jurisdiction; obtain all required certificates of inspection for his work.

B. The Contractor shall include in the work, without extra cost to the Owner, any labor, materials, services, apparatus, drawings in addition to Contract Drawings and Documents, in order to comply with all applicable laws, ordinances, rules and regulations whether or not shown on the drawings and/or specified.

C. All materials furnished and all work installed shall comply with the rules and recommendations of the National Electrical Code, the National Board of Fire Underwriters', all requirements of the local utility company, recommendations from the fire insurance rating organizations having jurisdiction, and with the requirements of all state, local, town, city, or county departments having jurisdiction.

1.10 DEFINITIONS

A. "The Contractor" means specifically the Contractor responsible for the entire contract.

B. "Furnish and Install or "Provide" means to supply, erect, install and connect up, complete for regular operation, the particular work referred to unless otherwise specified. "Piping" includes in addition to pipe, all fittings, boxes, hangers and other accessories relating to such piping. "Concealed" means hidden from sight as in trenches, chases, furred spaces, shafts, hung ceilings, embedded into construction, ground or concealed as defined above.

1.11 INSPECTION AND TEST

A. All work will be subject to the inspection of the Engineer and such other inspections are may have jurisdiction.

B. As the various part of the works are installed and/or revised, insulation resistance test shall be made to insure that the new systems are free from short circuits and grounds and that all connections, switches, controls and equipment are in proper operating condition.

C. The installation resistance between conductors and between conductors and grounds, for the distribution systems shall be not less than the requirements of the National Electrical Code.

D. All testing equipment necessary shall be provided. The tests shall incur no additional expense to the Owner.

E. Failure or defects in workmanship or materials revealed by tests shall be corrected promptly and retested. Defective materials furnished under this contract shall be replaced at no additional expense to the Owner.

1.12 CODES AND STANDARDS

A. Installation shall comply in all details with the National Electrical code with its latest revisions and all prevailing local, Federal and State Regulations.

1.13 EXAMINATION OF SITE AND CONTRACT DOCUMENTS

A. Before submitting prices or beginning work, thoroughly make an examination of the site and the Contract Documents.

B. No claim for extra compensation will be recognized if difficulties are encountered which an examination of site conditions and Contract Documents prior to executing contract would have revealed.

C. The drawings showing layout of the electrical systems indicate the approximate location of outlets, apparatus and equipment. The runs of feeders and branch circuits as shown on the drawings are schematic only, and are not intended to show the exact routing of the wire; the final determination as to the routing of the wire shall be

governed by structural conditions and other obstructions. This shall not be construed to mean that the design of the system may change; it merely refers to the exact run of a raceway between given points.

D. The right to make any reasonable change in the location of outlets, apparatus and equipment up to the time of roughing-in is reserved by the Owner without involving any additional expense to the Owner.

E. The Drawings and these specifications are complementary with one another, any labor or materials called for by either, whether or not by both, or necessary for the successful operation of any of the particular types of equipment furnished under this contact, shall be furnished and installed.

F. Before installing any work, see that it does not interfere with the clearance required for finished columns, pilasters, partitions or walls, as shown on the contract drawings and details.

G. Be responsible for all materials delivered to the site in connection with the work and pay all charges for cartage, scaffolds, planking, rigging and erecting. Take every precaution necessary to protect equipment and installation in addition to plugging and protecting open ends of all pipes, outlet boxes, panelboxes, and junction boxes. All equipment must be stored in a clean dry place to preserve the quality of materials being used. Equipment and/or materials damaged during the construction period shall be replaced at no additional cost to the Owner.

H. All materials and equipment required by this Electrical Specification shall be new, clean, and free of defects at the time of installation. The manufacturer's and Underwriter's label shall be on all materials and equipment unless otherwise approved, in writing, by the Engineer.

1.14 SUBSTITUTION OF MATERIALS OR EQUIPMENT

A. If the Contractor wishes to use materials or equipment other than those specifically designated herein, as being equal to those so specifically designated; BEFORE PURCHASING AND/OR FABRICATION, he shall submit the proposed substitution in accordance with the requirements of the GENERAL CONDITIONS, supported by sufficient proof of equality, the successful Contractor will be required to furnish the specifically named items designated under the base bid.

B. If the apparatus or materials substituted for those specified necessitate changes or additional connections, piping supports, or construction: same shall be provided and the Contractor shall assume the cost and the entire responsibility thereto.

C. The Engineer's permission to make such substitutions shall not relieve the Contractor from full responsibility for the work.

1.15 DAMAGE TO OTHER WORK

A. Each Contractor shall be held responsible for and shall pay for all damage to other work caused by his work or workmen.

B. Repairing of such damage shall be done by the Contractor who installed the work, and so directed by the Engineer.

1.16 COORDINATION OF TRADES

A. The Contractor shall give cooperation to other trades and shall furnish (in writing, with copies to the Engineer) any information necessary to permit the work of all trades to be installed satisfactorily and with the least possible interference or delay. Where the work of The Contractor will be installed in close proximity to work of other trade, or where there is evidence that the work of The Contractor will interfere with work of other trades, he shall assist in working our space conditions to make a satisfactory adjustment. If so directed by the Engineer, The Contractor shall prepare composite working drawings and sections, in conjunction with other trades at a suitable scale not less than 1/4" - 1"-0", clearly showing the installation of his work in relation to the work of other trades. If The Contractor installs his work before coordinating with other trades, or so as to cause interference with work of other trades, he shall make necessary changes in his work to correct the conditions without extra charge. All cutting, patching, excavation and backfilling, except for primary electrical service, shall be done by the Contractor. The Contractor shall inform the Contractor well in advance as to his requirements, and if, in the Engineer's judgment, he is negligent in this respect, The Contractor shall bear all expenses flowing from his negligence with respect thereof.

1.17 PROCEDURE

A. The Contractor shall provide all labor and materials necessary for the complete and substantial execution of the work, including all transportation, scaffolding, apparatus, utensils, tools, etc., requisite for the faithful performance of the work to the true intent and meaning of the Specifications, Drawings, and Instructions. All workmanship and materials shall be of the best of their respective kinds.

B. The Contractor shall store his material and equipment prior to installation only where designated by the Owner. He shall be responsible for all his property stored on the premises and shall hold the Owner free from liability for loss by theft or carelessness of employees of the Owner, or of other Contractors. The Contractor must take particular care to protect any finished work from injury caused thereto by his operations. After completion of the work, The Contractor shall remove all waste, rubbish and other materials left as a result of his operations and leave the premises in clean condition.

1.18 FIELD MEASUREMENTS

A. The Contractor shall verify in the field all measurements necessary for his work and shall assume responsibility for their accuracy.

1.19 CLEANING AND PROTECTION

A. All materials and equipment shall be carefully protected during shipment and protected during installation and properly handled and stored at the job site so as to prevent damage. The Contractor shall assume full responsibility for protection of work until its completion and final acceptance.

B. Upon completion of this work, The Contractor shall clean all fixtures and equipment and replace damaged parts. Upon failure of The Contractor to fulfill his obligation, this work will be taken care of at his expense.

1.20 GUARANTEE

A. All materials, items of equipment and workmanship furnished under this Section shall carry the standard warranty against all defects in materials and workmanship for a period of not less than one (1) year from the date of final acceptance of the work.

1.21 CLEANING UP

A. The Contractor shall, at the completion of the work, clean, polish and/or wash all exposed items of material, equipment and fixtures in his contract so as to leave such items bright and clean. Special attention being given to interiors and exteriors of all panels, electrical equipment, and enclosures.

B. All painted metal surfaces which have been scratched, dented or marred shall be re-painted by the Contractor.

C. After completion of the work, the Contractor shall remove all waste, rubbish and other materials left as a result of his operation and leave the premises in clean condition.

D. At the completion of each work day, the Contractor shall remove all waste, rubbish and other material in each dwelling unit. In addition, the contractor shall wet mop all areas disturbed by work personal during the workday.

1.22 CONFLICT BETWEEN PLANS AND SPECIFICATIONS

A. In case of a conflict between contract plans and the specification the Engineer will decide which takes precedence.

1.23 SUPERINTENDENCE OF WORK

A. The Contractor shall give his personal superintendence to the work and shall retain at the job site during the period of construction, a competent foreman, satisfactory to the Engineer, who shall be in full charge or the work under this Section.

1.24 SITE VISITATION

A. The Contractor shall be required to visit the site and to have examined the existing conditions which may affect his work under this Contract. Failure to do so shall be his responsibility and no claims for extra compensation or extension of time shall be allowed because of lack of compliance herewith.

1.25 COOPERATION AND WORK PROGRESS

A. The electrical wiring shall be carried on under the usual construction conditions, in conjunction with all other work at the site. The Contractor shall cooperate with the Engineer and all contractors and equipment suppliers working on the site, coordinate the work, and proceed in a manner so as not to delay the progress the project.

B. The Contractor shall coordinate his work with the progress of the building and other trades so that he shall complete his work as soon as conditions permit. Any overtime hours worked or additional costs incurred due to lack of or improper coordination with other trades of the Owner by the Contractor shall be assumed by the Contractor without any additional cost to the Owner.

C. The Contractor has a responsibility to coordinate the exact mounting arrangement and location of equipment indicated on the Drawings to allow for proper space requirements for equipment access, operation and maintenance. Particular attention shall be given in the field to such group installations. If it is questionable that insufficient space or conflict with the work of other contractors, or Architectural or structural obstructions will result in an arrangement which will prevent proper access, operation or maintenance of the indicated equipment, the Contractor shall immediately notify the Engineer and not proceed with this part of the contract work until definite instructions have been given to him by the Engineer.

D. It shall be the responsibility of the Contractor to coordinate the delivery of electrical equipment to the project prior to the time installation of equipment will be required; but he also shall make sure such equipment is not delivered too far in advance of such required installation, to assure that possible damage and deterioration of such equipment will not occur. Such equipment stored for an excessively long period of time (as determined in the opinion of the Engineer) on the project site prior to installation may be subject to rejection by the Engineer.

1.26 REFERENCES

A. Installation shall comply in all details with the Massachusetts Electrical Code with its latest revisions and all prevailing local, Federal and State regulations.

B. Material and equipment shall be Underwriters' laboratories, Inc., listed, where a standard has been established.

C. Manufacturers' names and nomenclature facilitates descriptions of certain materials and equipment and are used to establish type, quality and function.

D. Unless otherwise specified, all work shall be manufactured, tested and installed in accordance with the latest editions of applicable publications and standards of the following organizations:

1. American Society for Testing and Material (ASTM).
2. Underwriters' Laboratories, Inc. (U.L.)
3. Insulated Power Cable Engineers Association (IPCEA).
4. National Electrical Manufacturers Association (NEMA).
5. Institute of Electrical and Electronic Engineers (IEEE).
6. American National Standards Institute (ANSI).
7. National Fire Protection Association (NFPA).
8. Massachusetts Electrical Code (MEC).
9. American Concrete Institute (ACI).

E. Should specifications, Engineer's instructions, laws, ordinances or public authority require any special tests or approvals, arrange for these and give the Engineer timely notice. If the inspection is by another authority other than the Engineer, notify the Engineer of the dates fixed for such inspection.

F. Make all reasonable tests required by the Engineer to provide the integrity of the electrical installation and leave the entire installation properly adjusted and in operating condition. After connections are made test the insulation resistance of all parts of the electrical work except that which is not furnished under this Specification. All wiring shall be so installed that when completed the system will be free from short circuits and from unintentional grounds.

G. Where reference is made to Codes and Standards these shall be interpreted as minimum requirements. Requirements in excess of these codes and Standards may be indicated on the Drawings or in the Specifications and shall be so included in the contract work. Compliance with such code requirements only shall not be construed as fulfillment of the contract work, where the plans and/or Specifications indicate additional work which may exceed such code standards.

H. Copies of NEMA, NFPA, and NEC shall be made available by the Contractor at the job site.

PART 2: PRODUCTS

2.1 PVC RIGID NON-METALLIC CONDUIT:

A. This Contractor shall furnish and install Schedule 40 PVC conduit underground as herein specified and indicated on the Drawings. The Schedule PVC conduit shall be manufactured by Carlon, Canron, Sloan or approved equal.

B. PVC Type 40 conduit for application in underground, encased and exposed applications in accordance with the National Electrical Code (Article 347).

C. Conduit shall be Carlon Plus 40, 90 degrees C, UL rated or approved equal. Material shall comply with NEMA Specification TC-2 Conduit, TC-3 (Fittings-UL-514) and UL- 651 (Standard for rigid non-metallic conduit).

D. The conduit and fittings shall carry a UL label (on each 10 foot length) of conduit and stamped or molded on every fitting).

E. Conduit and fittings shall be identified for type and manufacturer and shall be traceable to location of plant and date manufactured. The markings shall be legible and permanent.

F. The conduit shall be made from polyvinyl chloride C-300 compound which includes inert modifiers to improve weatherability, heat distortion. Clean re-work material, generated by the manufacturer's own conduit production, may be used by the same manufacturer, provided the end products meet the requirements of this specification.

G. The conduit and fittings shall be homogeneous plastic material free from visible cracks, holes or foreign inclusions. The conduit bore shall be smooth and free of blisters, nicks or other imperfections which could mar conductors or cables.

H. Conduit, fittings and cement shall be produced by the same manufacturer to assure system integrity.

I. Conduit and fittings shall be tested in accordance with the testing requirements defined in NEMA TC-2, NEMA TC-3, and UL-651 and UL-514 (fittings). The acceptance criteria shall be as given in the same standards.

J. All conduit and fittings shall be solvent cemented in applications in accordance with instructions from the manufacturer using cement equal to Carlon all weather "quick set clean solvent cement with recommended installation temperature or 5 degrees to 100 degrees F and set-up time (evaporation rate) at 10 degrees - 30 degrees F of 4 - 5 minutes.

2.2 RIGID STEEL CONDUIT

A. All rigid steel conduit shall be standard IPS, galvanized or sheradized, threaded conduit equal to Allied Tube.

B. Changes in direction of conduit, where concealed, shall be made by means of standard radius bends, and where exposed, or by means of galvanized, or sheradized threaded condulets as manufactured by Crouse-Hinds or equal.

C. Conduits shall be continuous from junction or pull boxes and shall enter and be secured to all boxes in such a manner that each system shall be electrically continuous from service to all outlets. Terminals of all conduits shall be furnished with double lock nuts and grounding bushings.

2.3 ELECTRICAL METALLIC TUBING

A. Electrical metallic tubing shall be as manufactured and may be used for main feeders to light and power panels.

B. Tubing shall be continuous between outlets, making a continuous electrical system for bonding.

C. Connector and couplings shall be set screw type.

2.4 FLEXIBLE METALLIC CONDUIT

A. Flexible metallic conduit may be used for short connections to recessed fixtures and motors, except in wet areas. In wet areas liquid tight flexible metallic conduit shall be used.

2.5 WIRES AND CABLES

A. All conductor wire and cable shall consist of thoroughly tinned 98% conductivity copper, with 600 volt insulation, manufactured in strict accordance with the requirements of the Board of Underwriters' and AIEE.

B. No wires smaller than No. 12 shall be used for any branch circuit unless noted on plans for special system circuits. Larger sizes shall be used where so indicated on the Drawings.

C. All 600 volt wire and cables shall be single conductor suitable for use in wet areas and dry locations; shall have an insulation that is moisture and heat resistant cross linked thermosetting polyethylene without an outer jacket, shall be type "THHN" as manufactured by General Electric, Okonite or Rome Cable. Wire sized No. 12 and No. 10 AWG shall be solid. Sizes 8 and larger shall be stranded.

2.6 OUTLET BOXES

A. Furnish and install all required outlet boxes as manufactured by Appleton, National, or Steel City.

B. All outlet boxes for concealed work shall be galvanized, stamped steel; those for fixtures, furnished with a fixture stud.

C. Outlet boxes shall be of size and type to accommodate (1) structural conditions, (2) size and number of raceways, conductors or cables entering, and (3) devices or fixtures for which they are required.

D. Wall outlets shall be 4" sq. x 1-1/2" deep with plaster covers to suit, or Standard "new work" wall case boxes. Wall boxes shall be designed for rigid metallic conduit and shall be the best type for the wall construction involved.

E. Install blank plates on all outlet boxes, in which no apparatus is installed, which do not integrally provide a cover for the box.

F. Special care shall be taken to set all boxes correctly square and true with the building finish. As far as possible, all wall and switch outlets shall be erected in advance of furring and fireproofing, and shall be secured to the building structure or steel by adjustable strap iron supports, which shall be buried in.

G. The exact location of all outlets and switches in finished rooms shall be obtained from the Engineer and from the Scale Drawings of interior details and finish. Final correct readjustment shall be made to the outlets if necessary to give proper centering.

H. In centering of outlets and location of outlet boxes, allow for overhead pipes, and thickness of fireproofing and plastering; also for window trim, paneling, hung ceilings and the like. Any inaccuracy resulting from failure to do so must be corrected under this Section of the Specifications without expense to the Owner. Confer with the Engineer and other Contractors and find out where hung ceilings occur and piping and ductwork run before signing the Contract and include in proposal what ever costs of the electrical work these conditions necessitate.

I. The locations given or designated on the Drawings for the outlets are subject to modification. In the case of local wall switches established by the swing of the door. In all cases, the switch shall be on the side of the door opposite the hinges.

2.7 JUNCTION AND PULL BOXES

A. Junction or pull boxes shall be furnished and installed under this Section of the Specifications where indicated on the Drawings and wherever else such a box may be deemed necessary to facilitate the pulling or splicing of wires or cables.

B. All such boxes must be made accessible and shall be built only from approved detail Working Drawings. Conduits shall enter these boxes through tight fitting clearance holes.

C. The covers of the boxes shall be designed for quick removal. Where junction boxes are required for a splicing box for special recessed fixtures, consult the Engineer before installing boxes for these fixtures and determine the exact location of the boxes.

D. Each feeder passing through a pull box shall be tagged or designated in some other approved manner. If tags are used, they shall be of fireproof material.

E. Locations of junction boxes and pull boxes shall meet the approval of the Engineer. Generally, junction boxes and pull boxes shall not be exposed in finished spaces; where necessary re-route conduits or make other arrangements to meet the approval of the Engineer.

F. Junction boxes or pull boxes used with unmetered electric feeders shall be provided with hasps and shall be sealed with a utility company entrance seal.

G. A nameplate shall be installed on the junction box or pull box cover indicating that the cover shall not be removed without contacting the utility company to reseal the junction box or pull box.

2.8 PANELBOARDS (LBA)

A. Panels shall be type ANQOD≅ bolted as manufactured by Square AD≅, Siemens, Cutler Hammer or General Electric.

B. The panelboard schedule indicates the details as to size, voltage, capacity and number of circuits necessary, including spares.

C. The panelboard shall conform to the requirements of the Underwriters= label.

D. The panelboard shall be designed for operation at 120/240 volts 1 phase 3 wire.

E. Circuit breakers 1 and 2-pole for 120/240 volts application in panel “LBA” shall be type AQOB≅ switch rated 22,000 amps interrupting capacity as indicated on drawings. Circuit breakers shall be bolt-on type.

F. Furnish six (6) circuit breaker locks for branch circuit locking control.

G. All locks of all panels shall be operated by a common master key.

H. Furnish and install on the inside cover of all light and power panels, a neatly typed index, giving the circuit number; and opposite each number the area of equipment which that particular circuit serves or controls.

I. In connecting branch circuits to panels, care shall be taken to insure balance; and circuit numbering shown on plans shall be changed to prevent same circuits on same phase being connected to a common neutral.

J. Panelboards shall be furnished with hinged trim with door and door covers to provide easy access to the panelboard interior, without removing the panelboard cover.

K. Panelboard bussing shall be copper and shall meet the requirements of the Owner.

2.9 PANELBOARDS (MDP)

A. Panels shall be type ANQOD≅ bolted as manufactured by Square AD≅, Siemens, Cutler Hammer or General Electric.

B. The panelboard schedule indicates the details as to size, voltage, capacity and number of circuits necessary, including spares.

C. The panelboard shall conform to the requirements of the Underwriters= label.

D. The panelboard shall be designed for operation at 120/240 volts 1 phase 3 wire.

E. Circuit breakers 1 and 2-pole for 120/240 volts application in panel "MDP" shall be type AQOB≅ switch rated 42,000 amps interrupting capacity as indicated on drawings. Circuit breakers shall be bolt-on type.

F. Furnish six (6) circuit breaker locks for branch circuit locking control.

G. All locks of all panels shall be operated by a common master key.

H. Furnish and install on the inside cover of all light and power panels, a neatly typed index, giving the circuit number; and opposite each number the area of equipment which that particular circuit serves or controls.

I. In connecting branch circuits to panels, care shall be taken to insure balance; and circuit numbering shown on plans shall be changed to prevent same circuits on same phase being connected to a common neutral.

J. Panelboards shall be furnished with hinged trim with door and door covers to provide easy access to the panelboard interior, without removing the panelboard cover.

K. Panelboard bussing shall be copper and shall meet the requirements of the Owner.

2.10 PANELBOARDS (EDP)

A. Panels shall be type ANQOD≅ bolted as manufactured by Square AD≅, Siemens, Cutler Hammer or General Electric.

B. The panelboard schedule indicates the details as to size, voltage, capacity and number of circuits necessary, including spares.

C. The panelboard shall conform to the requirements of the Underwriters= label.

D. The panelboard shall be designed for operation at 120/208 volts 3 phase 4 wire.

E. Circuit breakers 1, 2 and 3-pole for 120/208 volts application shall be type AQOB≅ switch rated 22,000 amps interrupting capacity as indicated on drawings. Circuit breakers shall be bolt-on type.

F. All locks of all panels shall be operated by a common master key.

G. Furnish and install on the inside cover of all light and power panels, a neatly typed index, giving the circuit number; and opposite each number the area of equipment which that particular circuit serves or controls.

H. In connecting branch circuits to panels, care shall be taken to insure balance; and circuit numbering shown on plans shall be changed to prevent same circuits on same phase being connected to a common neutral.

I. Panelboards shall be furnished with hinged trim with door and door covers to provide easy access to the panelboard interior, without removing the panelboard cover.

J. Panelboard bussing shall be copper and shall meet the requirements of the Owner.

2.11 NAMEPLATES

A. Nameplates consisting of black mica with white center, lettering to be 1/4" high engraved through to white layer and properly fastened with brass screws shall be provided for the following equipment:

1. Transformer.
2. Disconnect switches/enclosed circuit breakers.
3. New panelboards.
4. Junction boxes/pull boxes.
5. Automatic transfer switches.

2.12 DISCONNECT SWITCHES

A. Furnish and install safety switches as required by plans and specifications. All safety switches shall be NEMA Heavy Duty Type HD and Underwriters' Laboratories listed. Square D Class 3110 or approved equal as manufactured by Siemens or General Electric.

B. All switches shall have switch blades which are fully visible in the OFF position with the door open. All current-carrying parts shall be plated through electrolytic processes to resist corrosion and promote cool operation.

C. All switches shall have switch blades which are visible when the switch is OFF and the cover is open.

D. The lugs shall be front removable and UL listed for 60E C or 75E C conductors (30-100 ampere) conductors (200-1200 ampere) respectively.

E. All current carrying parts shall be plated to resist corrosion.

F. The switches shall have removable arc suppressors to facilitate easy access to line side lugs.

G. The switches shall have provisions for a field installable electrical interlock.

H. The switch operating mechanism shall be quick-make, quick-break such that, during normal operation of the switch, the operation of the contacts shall not be capable of being restrained by the operating handle after the closing or opening action of the contacts has started.

I. The operating handle shall be an integral part of the box, not the cover.

J. Provisions for padlocking the switch in the OFF position with at least three padlocks shall be provided.

K. The handle position shall travel at least 90E between OFF and ON positions to clearly distinguish and indicate handle position.

L. All switches shall have a dual cover interlock mechanism to prevent unintentional opening of the switch cover when the switch is ON and prevent turning the switch ON when the cover is open. The cover interlock mechanism shall have an externally operated override but the override shall not permanently disable the interlock mechanism. The tool used to override the cover interlock mechanism shall not be required to enter the enclosure in order to override the interlock.

M. The switch covers shall be attached with welded pin-type hinges.

N. The enclosure shall be finished with gray baked enamel paint which is electrodeposited on cleaned, phosphate pre-treated steel (type 1), gray baked enamel paint which is electrodeposited on cleaned, phosphate pre-treated galvannealed steel (Type 3R).

O. The enclosure shall have ON and OFF markings stamped into the cover.

P. The operating handle shall be provided with a dual colored, red/black position indication.

Q. All switches shall have provisions to accept up to three 3/8 in hasp padlocks to lock the operating handle in the OFF position.

R. Tangential knockouts shall be provided to facilitate ease of conduit entry for switches rated 30-200A.

S. Enclosures for type 3R switches through 200 ampere shall have provisions for interchangeable bolt-on hubs in the top endwall. Hubs shall be Square D B-Type hubs sized as indicated on the plans.

T. Switch ratings:

1. Switches shall be horsepower rated for ac and/or dc as indicated on the plans.

2. The UL listed short circuit current rating of the switches shall be 200,000 rms symmetrical amperes with or protected by Class R or Class J fuses (30-600 ampere switches employing fuse rejection schemes).

2.13 FIRE PROOF SEAL MATERIAL:

A. Fire Stop Foam:

1. The fire stopping sealant shall be a one-part, neutral curing silicone sealant. The sealant shall be completely water resistant and shall contain neither solvents nor inorganic fibers of any kind. The through-penetration firestop sealant shall allow movement of +25% and shall be UL Classified and/or FM Systems Approved and tested to the requirements of ASTM E814 (UL1479). The firestop joint sealant shall allow movement up to + 50% and shall be UL Classified and tested to the requirements of UL2079.

B. Firestop Mortar:

1. The fire stopping material shall be a light-weight, fast drying Portland cement based material. The density of the wet mortar shall be < 45 lb./cu.ft. The specified mortar shall be approved for a wide range of applications including combustible and non-combustible penetrants when used by itself or in combination with other products from the same manufacturer. The firestop mortar shall be UL Classified and/or FM Systems Approved and tested to the requirements of ASTM E814 (UL1479).

2.14 EMERGENCY GENERATOR

A. Provide all labor materials, and equipment to furnish, install, and place in operation the diesel fueled Emergency/Standby power generation system in accordance with the contract documents and manufacturer's drawings and installation instructions. All equipment shall be new, factory tested, and delivered ready for field installation.

B. The responsibility for performance to this specification shall not be divided among individual component manufacturers, but must be assumed solely by the primary manufacturer. This includes generating system design, manufacture, test, and having a local supplier responsible for service, parts, and warranty for the total system.

C. Generator set mounted subassemblies such as cooling system, base, air intake system, exhaust outlet fittings, and generator set mounted controls and switchgear shall also be designed, built, and assembled as a complete unit by the engine/generator manufacturer.

D. The engine and generator shall be the product of an ISO 9001 certified manufacturer. The design is based on a Caterpillar engine/generator set. Any changes to the design based on other manufacturers will be the responsibility of the installing contractor at no additional cost to the owner. Units manufactured by Cummins/Onan, Generac or Kohler shall be considered. The naming of a specific manufacture does not waive any requirements or performance of individual components described in this specification.

E. The electric power generating system including engine mounted radiator shall have a site capability of:

175.0	KW
218.75	kVA ~ 0.8 PF, standby rating
120/208	Volts AC, Wye connected, 3 Phase, 60 Hertz
500	Altitude (Feet)
122	Maximum Engine Ambient Temperature (deg F)
-20	Minimum Outside Temperature (deg F)

F. Submittals for approval shall include but not be limited to:

1. Certification of Prototype Testing.

2. Component List - A breakdown of all components and options.

3. Technical Data - Manufacturer produced generator set specification or data sheet identifying make and model of engine and generator, and including relevant component design and performance data.

4. Auxiliary Equipment - Specification or data sheets, including switchgear, transfer switch, vibration isolators, and double wall sub-base tank.

5. Drawings - General dimensions drawings showing overall generator set measurements, mounting location, and interconnect points for load leads, fuel, exhaust, cooling and drain lines.

6. Wiring Diagrams - Wiring diagrams, schematics and control panel outline drawings published by the manufacturer for controls and switchgear showing interconnect points and logic diagrams for use by contractor and owner.

7. Warranty Statements - Warranty verification published by the manufacturer.

G. The emergency generator manufacturer shall perform production tests on the complete generator set supplied at the generator set manufacturers facility. A certified report of these tests shall be available when requested at the time of the generator set order. These tests and controls shall include but not be limited to:

1. Operation at rated kW
2. Operation at rated kVA
3. Transient and steady state governing
4. Transient and steady state voltage regulation
5. Operation of all alarm and shutdown devices
6. Single step load pickup of rated kW
7. Operation at 2250 rpm (125% overspeed) at room temperature

H. The emergency generator manufacturer must certify that engine, generator, controls, and switchgear have been tested as complete system of representative engineering models (not on equipment sold). Prototype testing shall include:

1. Fuel consumption at 1/4,1/2, 3/4, and full load
2. Exhaust emissions The engine emissions must be certified to meet Tier III emission guidelines in accordance with the Commonwealth of Massachusetts Emission Regulations.
3. Mechanical and exhaust noise
4. Governor speed regulation at 1/4, ½, 3/4, and full load; and during transients
5. Motor starting kVA
6. Generator temperature rise in accordance with NEMA MG 1-22.40
7. Voltage regulation at 1/4, ½, 314, and full load; and during transients
8. Harmonic analysis, voltage waveform deviation and telephone influence factor
9. Generator short circuit capability
10. Cooling system performance
11. Torsional analysis
12. Linear vibration analysis
13. Generator revolving field assembly for 2 hours at 2700 rpm (150% overspeed) and 70C, and each production unit tested at 2250 rpm (125% overspeed) at room temperature.

I. The manufacturer's and dealer's standard warranty shall in no event be for a period of less than one (1) year from date of initial start-up of the system and shall include repair parts, labor, reasonable travel expense necessary for repairs at the job site, and expendables (lubricating oil, filters, antifreeze, and other service items made unusable by the defect) used during the course of repair. Applicable deductible costs shall be specified in the manufacturer's warranty. Running hours shall not be a limiting factor for the system warranty by either the manufacturer or servicing dealer. Submittals received without written warranties as specified will be rejected in their entirety.

J. The emergency generator set supplier shall have factory trained service representatives and tooling necessary to install, test, maintain, and repair all provided equipment and shall be located within 75 miles of the customer’s site.

K. The emergency generator set supplier shall have sufficient parts inventory to maintain over the counter availability of at least 90% of any required parts and shall guarantee 100% parts availability within 48 hours from the time an order is entered with the dealer.

L. The power generating system shall conform to the following performance criteria at the site conditions:

1. Rating - Engine brake horsepower shall be sufficient to deliver full rated generator set kW/kVA when operated at rated rpm and equipped with all engine-mounted parasitic and external loads such as radiator fans and power generators.
2. Start Time and Load Acceptance - Engines shall start, achieve rated voltage and frequency, and be capable of accepting load within 10 seconds when properly equipped and maintained.
3. With the power generating system at normal operating temperature, it shall accept a 100% block load, less applicable dating factors, in accordance with NFPA 110.
4. Frequency regulation shall be Isochronous, regulated to within +/- 0.25 % from no load to full load.
5. Voltage regulation shall be +/- 0.5% for any steady state load between no load and full load.

M. The emergency generator set shall be certified and in compliance with the 1996 Non-Road, Off-Highway EPA and CARB Emission regulations.

N. The engine shall be diesel fueled and shall be a stationary, liquid cooled, 1800 rpm, four-cycle design, vertical in-line, with dry exhaust manifolds. It shall have 6 cylinders with a minimum cubic inch displacement of 402.7 and be manufactured in the United States.

O. The emergency generator engine accessory equipment shall be as follows:

1. The engine shall be cooled by an engine mounted, vertical radiator with blower type fan, using a 50% antifreeze/coolant mixture. Antifreeze shall have a service life of 3,000 hours without maintenance. The radiator shall properly cool the engine while the engine is operating at full load and 0.25 inch H20 external air restriction. The minimum ambient capability shall be 122 ºF. Air-flow total for combustion and cooling shall not exceed 8,600 CFM.
2. Electric starting motor and control circuit capable of three complete starting cycles without overheating.
3. Mechanical, positive displacement lube oil pump with replaceable full flow filter, oil cooler, and dip stick.
4. Mechanical, positive displacement fuel transfer pump with replaceable full flow filter.
5. Fuel Filter and serviceable fuel system components shall be located to prevent fuel from spilling onto gen-set batteries.
6. Manually operated fuel priming pump.
7. Replaceable dry element air filter.
8. Engine mounted electrically powered, thermostatically controlled jacket water heater sized to ensure proper starting. Shall include isolation valves and adjustable thermostat.
9. Flexible, stainless steel exhaust connector.
10. Flexible fuel lines
11. Battery charging alternator with regulator and charge rate ammeter.

P. The emergency generator shall be reconnectable, close coupled, drip proof and guarded, constructed to NEMA 1 and IP 22 standards, single bearing, salient pole, revolving field, synchronous type with amortisseur windings in the pole faces of the rotating field and skewed slator windings to produce optimum voltage waveform.

Q. The generator shall be capable of delivering rated kVA at 60 Hz and 0.8 PF within +/- 5% of rated voltage.

R. All insulation systems shall meet NEMA MG-1 standards for Class H systems. The actual generator temperature shall be limited to Class F levels (130EC rise by resistance over 40EC ambient). Materials which support fungus growth shall not be used.

S. The revolving field coils shall be precision wet layer wound with epoxy based material applied to each layer of magnet wire. The revolving field assembly shall be prototype tested for 2 hours at 2,700 rpm (150% over-speed) and 70 deg C, and each production unit shall be tested at 2,250 rpm (125% over-speed) at room temperature. The revolving field assembly shall be balanced to 0.5 mil peak-peak. The stator shall have two dips and bakes using Class H impregnating varnish.

T. The three phase permanent magnet (PMG) generator shall provide the source of excitation to the exciter to increase immunity to non-linear loads and to maintain 300% of rated current for 10 seconds during short-circuit conditions.

U. The automatic voltage regulator (AVR) shall maintain generator output voltage within +/- 0.5% for any constant load between no load and full load.

V. The regulator shall be a totally solid state design which includes electronic voltage buildup, volts per Hertz regulation, three phase sensing, over-excitation protection, loss of sensing protection, temperature compensation, shall limit voltage overshoot on startup, and shall be environmentally sealed.

W. Each three (3) pole main line circuit breaker shall be provided to protect the generator against external faults and provide a positive disconnect device at the generator output terminals. The breaker[s] shall be UL listed with shunt trip device connected to engine I generator safety shutdowns. The breakers shall be mounted on the generator in a NEMA 1P22 guarded drip-proof enclosure which provides direct access for cable from the top or bottom.

X. The control panel shall be designed and built by the engine-generator manufacturer. It shall be mounted on the generator set and incorporate 100% solid state microprocessor based control circuitry and digital instrumentation.

Y. All electronic control components are to be mounted in sealed, dust tight, Watertight, metal housings. Housings which must be opened for service or setup are not acceptable. All output circuits greater than 1OOmA shall be fuse or circuit breaker protected. The panel shall be labeled with ISO symbols and comply with IEC 144, IP 22, and NEMA 12 for external environmental resistance, and IP 44 and NEMA 12 for resistance of the internal sealed modules. The control panel shall be capable of facing the right, left, or rear and shall be vibration isolated.

Z. The panel shall include the following equipment functions:

1. Automatic remote start capability with mode of operation selectable from a panel-mounted 4-position switch (Stop, Manual, Automatic, Reset).
2. Cycle crank with adjustable "crank" and "rest" times.
3. Adjustable cool down timer.
4. Emergency Stop push button requiring manual reset.
5. Voltage adjustment potentiometer to adjust voltage +10, -25% of rated.
6. Individual flashing LED's shall be provided. The use of a common alarm or shutdown lamp which depend on a separate display to determine the alarm or fault condition is not acceptable. Separate LED annunciation shall be provided for:
    a. Overcrank (red)
    b. High Coolant temperature (red)
    c. Low Oil pressure (red)
    d. Emergency Stop (red)
    e. Low Coolant Level (red)
    f. NFPA 99 alarm module with common alarm and silence switch.
7. Separate LED annunciation shall be provided for:
    a. Approach High Coolant Temperature (Amber)
    b. Approach Low Oil Pressure (Amber
    c. Low Water Temperature (Amber)
    d. Low DC Volts (Red)
    e. Low Fuel (Amber)
    f. Fuel Tank Rupture (Red)

g. Remote Annunciator Panel

8. The engine generator shall be supplied with a surface mount remote annunciator panel with face plate, mounted to annunciation terminal strip, to give remote indication of the following:

   a. Generator powering load (position signal from ATS)

   b. Battery charger malfunction (red)

   c. High jacket water temperature (pre-warn-amber) (shutdown – red)

   d. Low water temperature (pre-warn-amber)

   e. Low oil pressure (pre-warn-amber) (shutdown-red)

   f. Low fuel

   g. Over-speed (red)

   h. Over-crank (red)

   i. Fuel tank rupture

   j. Low water level

   k. Horn silence

9. Panel illumination lights (2) with ON/OFF switch

10. Separate digital displays shall be provided for the engine and generator parameters. These displays shall allow the simultaneous display of AC parameters and at least one (selectable) engine parameter to be displayed at the same time. Requirements for these displays are as follows:

    a. Digital display and phase selector switch for generator operational parameters. True RMS sensing of these parameters shall be utilized to minimize distortion due to non-linear loads and ensure accuracy.

       AC volts (+/- 0.5% accuracy)
       AC amps (+/- 0.5% accuracy)
       Hertz (+1-0.3 Hz accuracy)

    b. Digital display for:

       Engine RPM (+/- 0.5% accuracy)
       DC voltage (+/- 0.5% accuracy)
       Oil pressure (+/- 0.5% accuracy)
       Coolant temperature (+/- 0.5% accuracy)
       Operating hours

11. Diagnostic capability:

    a. Must provide dual level diagnostics identifying both system level and component level. The diagnostic codes shall be maintained in a history log specifying the number of occurrences, and second/minute/hr at which they occur

12. Sensors:

    a. Sensors providing a pulse width modulated output shall be utilized for oil pressure, coolant temperature sensing and shall be protected against a fault to battery. The usable output range of the sensor shall be limited to 5% to 95% duty cycle. Output outside the usable range shall be diagnosed as a fault condition and appropriate diagnostic shall be provided. Separate speed sensing signals shall be provided for overspeed protection and electronic governor.

13. Ambient parameters:

    a. operating: -40C to +70C (-40 F to +158 F)

    b. storage: -55 C to +85 C (-67 F to +185 F)

c. humidity: 0 to 100% relative humidity

14. Must be impervious to salt spray, fuel, oil and oil additives, coolant, spray cleaners, chlorinated solvents, hydrogen sulfide and methane gas, and dust.

AA. The engine and generator shall be assembled to the base using vibration isolators which comply with seismic zone 2. The generator set base shall be designed and built by the engine-generator manufacturer to resist deflection, maintain alignment, and minimize resonant linear vibration.

BB. A dual rate 10 ampere battery charger shall be provided which shall accept 120 volt AC single phase input to provide 24 volt DC output. It shall be fused on the AC input and DC output, incorporate current limiting circuitry, and include a DC ammeter and voltmeter. The use of a crank disconnect relay to protect the charger during starting is not acceptable. The charger shall be housed in a NEMA 1 enclosure vibration suitable for wall mounting.

CC. The charger shall include LED annunciation for low battery voltage, high battery voltage, battery charger malfunction, and AC failure; and dry contacts for battery charger malfunction and low battery voltage.

DD. Twenty-four (24) volt starting batteries; sized as recommended by the generator set manufacturer to comply with the starting and temperature specifications; battery cables, and base mounted battery rack shall be provided. The batteries shall be warranted by the gen set manufacturer.

EE. The Base tank system shall be supplied by the engine generator set supplier and shall include the following:

1. 72 Hour tank, with generator operating at full load, pressure tested, double walled, U/L Listed
2. Rupture basin alarm contact
3. Low level alarm contact.
4. Venting per UL requirement.
5. Fuel gauge, dial type
6. Connections for:
   a. Engine supply.
   b. Engine return.
   c. Vents
   d. Bottom drain.
   e. Fuel gauge.
   f. Manual fill cap, lockable.
7. A critical exhaust silencer shall be sized and supplied by the engine supplier. The silencer and associated piping shall not impose more than 27 inches water restriction.
8. The silencer shall utilize a high temperature coating system to prevent rusting and shall be mounted near the engine to minimize noise and condensation. A provision for draining moisture shall be included.
9. The silencer shall be mounted and insulated inside the sound attenuated enclosure.

FF. Steel weather protective, sound attenuated enclosure with 14 gauge sheet metal and a minimum ambient capability of 43 deg C (110 F) shall have removable hinged doors and removable end panels to allow easy routine maintenance. All hinges and latches shall be rust resistant and doors shall be equipped with rubber seals. A lockable service access cover shall be provided for easy access to the radiator fill cap. The roof shall be pitched to prevent moisture accumulation. The enclosure shall be painted yellow utilizing an electro statically applied powder baked paint. The enclosure shall reduce the noise produced by the generator set to 71.1 dba at 7 meters while operating at rated load.

GG. The installation shall be performed in accordance with shop drawings, specifications, and the manufacturer's instructions; and shall comply with applicable state and local codes.

HH. The generator set shall be tested as defined below by the manufacturers authorized dealer to show it is free of any defects and will start automatically and carry full load. This testing is to be performed at the jobsite. Testing shall be completed in the presence of the owner's engineer or his appointed representative. With the exception of fuel, all consumables necessary for testing shall be furnished by the bidder. Any defects which become evident during the test shall be corrected by the bidder at his own expense.

II. Proper operation of the following shall be demonstrated:

1. All auxiliary equipment supplied to this specification.
2. Starting and charging system components.
3. All controls, engine shutdowns, and safety devices

JJ. Cold start test:

1. The unit shall demonstrate the ability to start from a "cold" standby condition (ie. normal standby mode with engine coolant temperature at normal temperature established by properly functioning jacket water heater.

KK. On Site Load Bank Test/Building Load Test:

1. The unit shall be operated at 80% of full load rating for one hour followed by two hours operation at 100% full load. After the first half-hour stabilization period at full load, the following shall be recorded at fifteen minute intervals:
   a. Voltage, amperage and frequency
   b. Fuel pressure, oil pressure and water temperature
   c. Exhaust gas temperature at engine exhaust outlet
   d. Ambient temperature
2. After the on site load bank test, the unit shall be tested for operation of the building electric loads. This shall include simultaneous operation of the building fire pump vertical transport system and building life safety equipment. The contractor shall be required to test the operation of the fire pump at full flow to the building exterior at the nearest street catch basin.

LL. The system manufacturer's authorized local dealer shall furnish four copies each of the manuals and books listed below for each unit under this contract:

1. OPERATING INSTRUCTIONS - with description and illustration of all switchgear controls and indicators; and engine and generator controls and indicators.
2. PARTS BOOKS - that illustrate and list all assemblies, subassemblies and components, except standard fastening hardware (nuts, bolts, washers, etc.).
3. PREVENTATIVE MAINTENANCE INSTRUCTIONS - on the complete system that cover daily, weekly, monthly, biannual, and annual maintenance requirements and include a complete lubrication chart.
4. ROUTINE TEST PROCEDURES - for all electronic and electrical circuits and for the main AC generator.
5. TROUBLESHOOTING CHART - covering the complete generator set showing description of trouble, probable cause, and suggested remedy.

2.15 AUTOMATIC TRANSFER SWITCHES

A. The Contractor shall furnish and install the automatic transfer switches to automatically transfer between the normal and emergency power source. The transfer switches shall be supplied as part of the engine/generator package for system responsibility.

B. The automatic transfer switches covered by these specifications shall be designed, tested, and assembled in strict accordance with all applicable standards of ANSI, U.L., IEEE and NEMA.

C. Manufacturer shall submit shop drawings for review, which shall include the following, as a minimum:

1. Descriptive literature

2. Plan, elevation, side, and front view arrangement drawings, including overall dimension, weights and clearances, as well as mounting or anchoring requirements and conduit entrance locations.
3. Schematic diagrams.
4. Wiring diagrams.
5. Accessory list.

D. The automatic transfer switches shall be manufactured by Catapillar, Onan or Kohler.

E. General

1. The automatic transfer switches shall be furnished as shown on the drawings. Voltage and continuous current ratings and number of poles shall be as shown.
2. The transfer switches shall be mounted in a NEMA 1 enclosure, unless otherwise indicated. Enclosures shall be fabricated from 12 gauge steel. The enclosure shall be sized to exceed minimum wire bending space required by UL 1008.
3. The transfer switches shall be equipped with an internal welded steel pocket, housing an operations and maintenance manual.
4. The transfer switches shall be top and bottom accessible.
5. The main contacts shall be capable of being replaced without removing the main power cables.
6. The main contacts shall be visible for inspection without any major disassembly of the transfer switches.
7. All bolted bus connections shall have Belleville compression type washers.
8. When a solid neutral is required, a fully rated bus bar with required AL-CU neutral lugs shall be provided.
9. Control components and wiring shall be front accessible. All control wires shall be multiconductor 18 gauge 600 volt SIS switchboard type point to point harness. All control wire terminations shall be identified with tubular sleeve-type markers.
10. The switches shall be equipped with 90 degrees C rated copper/aluminum solderless mechanical type lugs.
11. The complete transfer switch assembly shall be factory tested to ensure proper operation and compliance with the specification requirements. A copy of the factory test report shall be available upon request.

F. Automatic Transfer Switches

1. The transfer switches shall be double throw, actuated by two electric operators momentarily energized, and connected to the transfer mechanism by a simple over center type linkage. Minimum transfer time shall be 400 milliseconds.
2. The normal and emergency contacts shall be positively interlocked mechanically and electrically to prevent simultaneous closing. Main contacts shall be mechanically locked in both the normal and emergency positions without the use of hooks, latches, magnets, or springs, and shall be silver-tungsten alloy. Separate arcing contacts with magnetic blowouts shall be provided on all transfer switches. Interlocked, molded case circuit breakers or contactors are not acceptable.
3. The transfer switch shall be equipped with a safe load break external manual operator, designed to prevent injury to operating personnel. The manual operator shall provide the same contact to contact transfer speed as the electrical operator to prevent a flashover from switching the main contacts slowly. The external manual operator shall be safely operated from outside of the transfer switches enclosure while the enclosure door is closed.

G. Automatic Transfer Switches Controls

1. The transfer switch shall be equipped with a microprocessor based control system, to provide all the operational functions of the automatic transfer switches. The controller shall have two asynchronous serial ports. The controller shall have a real time clock with Nicad battery back-up.

2. The CPU shall be equipped with self diagnostics which perform periodic checks of the memory I/O and communication circuits, with a watchdog/power fail circuit

3. The controller shall use industry standard open architecture communication protocol for high speed serial communications via multidrop connection to other controllers and to a master terminal with up to 4000 ft of cable, or further, with the addition of a communication repeater. The serial communication port shall be RS422/485 compatible.

4. The serial communication port shall allow interface to either the manufacturer's or the owner's furnished remote supervisory control.

5. The controller shall have password protection required to limit access to qualified and authorized personnel.

6. The controller shall include a 20 character, LCD display, with a keypad, which allows access to the system.

7. The controller shall include three phase over/under voltage, over/under frequency, phase sequence detection and phase differential monitoring on both normal and emergency sources.

8. The controller shall be capable of storing the following records in memory for access either locally or remotely:

   a. Number of hours transfer switches is in the emergency position (total since record reset).

   b. Number of hours emergency power is available (total since record reset).

   c. Total transfer in either direction (total since record reset).

   d. Date, time, and description of the last four source failures.

   e. Date of the last exercise period.

   f. Date of record reset.

H. Sequence of Operation

1. When the voltage on any phase of the normal source drops below 80% or increases to 120%, or frequency drops below 90%, or increase to 110%, or 20% voltage differential between phases occurs, after a programmable time delay period of 0-9999 seconds factory set at 3 seconds to allow for momentary dips, the engine starting contacts shall close to start the generating plant.

2. The transfer switches shall transfer to emergency when the generating plant has reached specified voltage and frequency on all phases.

3. After restoration of normal power on all phases to a preset value of at least 90% to 110% of rated voltage, and at least 95% to 105% of rated frequency, and voltage differential is below 20%, an adjustable time delay period of 0-9999 seconds (factory set at 300 seconds) shall delay retransfer to allow stabilization of normal power. If the emergency power source should fail during this time delay period, the switches shall automatically return to the normal source.

4. After retransfer to normal, the engine generator shall be allowed to operate at no load for a programmable period of 0-9999 seconds, factory set at 300 seconds.

I. Automatic Transfer Switches Accessories

1. Programmable three phase sensing of the normal source set to pickup at 90% and dropout at 80% of rated voltage and overvoltage to pickup at 120% and dropout out at 110% of rated voltage. Programmable frequency pickup at 95% and dropout at 90% and over frequency to pickup at 110% and dropout at 105% of rated frequency. Programmable voltage differential between phases, set at 20%, and phase sequence monitoring.

2. Programmable three phase sensing of the emergency source set to pickup at 90% and dropout at 80% of rated voltage and overvoltage to pickup at 120% and dropout out at 110% of rated voltage programmable frequency pickup at 95% and dropout at 90% and over frequency to pickup at 110% and dropout at 105% of rated frequency. Programmable voltage differential between phases set at 20%, and phase sequence monitoring.

3. Time delay for override of momentary normal source power outages (delays engine start signal and transfer switches operation). Programmable 0-9999 seconds. Factory set at 3 seconds, if not otherwise specified.

4. Time delay to control contact transition time on transfer to either source. Programmable 0-9999 seconds, factory set at 3 seconds.

5. Time delay on retransfer to normal, programmable 0-9999 seconds, factory set at 300 seconds if not otherwise specified, with overrun to provide programmable 0-9999 second time delay, factory set at 300 seconds, unloaded engine operation after retransfer to normal.

6. Time delay on transfer to emergency, programmable 0-9999 seconds, factory set at 3 seconds.

7. A maintained type load test switches shall be included to simulate a normal power failure, keypad initiated.

8. A remote type load test switches shall be included to simulate a normal power failure, remote switches initiated.

9. A time delay bypass on retransfer to normal shall be included. Keypad initiated.

10. Contact, rated 10 Amps 30 volts DC, to close on failure of normal source to initiate engine starting.

11. Contact, rated 10 Amps 30 volts DC, to open on failure of normal source for customer functions.

12. Light emitting diodes shall be mounted on the microprocessor panel to indicate switches is in normal position, switches is in emergency position and controller is running.

13. A plant exerciser shall be provided with (10) 7 day events, programmable for any day of the week and (24) calendar events, programmable for any month/day, to automatically exercise generating plant programmable in one minute increments. Also include selection of either "no load" (switches will not transfer) or "load" (switches will transfer) exercise period. Keypad initiated.

14. Provision to select either "no commit" or "commit" to transfer operation in the event of a normal power failure shall be included. In the "no commit position," the load will transfer to the emergency position unless normal power returns before the emergency source has reach 90% of its rated values (switches will remain in normal). In the "commit position" the load will transfer to the emergency position after any normal power failure. Keypad initiated.

15. Two auxiliary contacts rated 10 Amp, 120 volts AC shall be mounted on the main shaft, one closed on normal, the other closed on emergency. Both contacts will be wired to a terminal strip for ease of customer connections.

16. A three phase digital LCD voltage readout, with 1% accuracy shall display all three separate phase to phase voltages simultaneously, for both the normal and emergency source.

17. A digital LCD frequency readout with 1% accuracy shall display frequency for both normal and emergency source.

18. An LCD readout shall display normal source and emergency source availability.

19. Include (2) time delay contacts that open simultaneously prior to transfer in either direction. These contacts close after a time delay upon transfer. Programmable 0-9999 seconds after transfer.

20. Two position selector to provide either automatic or manual retransfer operation (with pushbutton).

J. Approval

1. As a condition of approval, the manufacturer of the automatic transfer switches shall verify that their switches are listed by Underwriters Laboratories, Inc., Standard UL-1008 with 3 cycle short circuit closing and withstand as follows:

RMS Symmetrical Amperes 208 VAC

	Current Limiting	
Amperes	Closing and Withstand	Fuse Rating
100-400	42,000	200,000
600-800	65,000	200,000

1000-1200	85,000	200,000
1600-4000	100,000	200,000

2. During the 3 cycle closing and withstand tests, there shall be no contact welding or damage. The 3 cycle tests shall be performed without the use of current limiting fuses. The test shall verify that contacts separation has not occurred, and there is contact continuity across all phases. Test procedures shall be in accordance with UL-1008, and testing shall be certified by Underwriters' Laboratories, Inc.

3. When conducting temperature rise tests to UL-1008, the manufacture shall include post-endurance temperature rise tests to verify the ability of the transfer switches to carry full rated current after completing the overload and endurance tests.

4. The microprocessor controller shall meet the following requirements:

   a. Storage conditions - 25 degrees C to 85 degrees C

   b. Operation conditions - 20 degrees C to 70 degrees C ambient

   c. Humidity 0 to 99% relative humidity, non-condensing

   d. Capable of withstanding infinite power interruptions

   e. Surge withstand per ANSI/IEEE C-37.90A-1978

5. Manufacturer shall provide copies of test reports upon request.

K. Manufacturer

1. The transfer switch manufacturer shall employ a nationwide factory-direct, field service organization, available on a 24-hour a day, 365 days a year, call basis.

2. The manufacturer shall include an 800 telephone number, for field service contact, affixed to each enclosure.

3. The manufacturer shall maintain records of each transfer switch, by serial number, for a minimum 20 years.

L. Automatic Transfer Switches shall be provided with adequate lifting means for ease of installation of wall or floor mounted enclosures.

M. Provide access and working space as indicated or as required.

N. Tighten assembled bolted connections with appropriate tools to manufacturer's torque recommendations prior to first energization.

2.16 TRANSFORMERS (240/120/208 VOLT)

A. In areas where the existing electrical distribution system is 240 volt three phase three wire 240/120/208 volt three phase four wire dry type transformers shall be installed as indicated on the plans. Dry type transformers shall be 240-volt, 3-phase, 3-wire delta to 120/208 volt, 3-phase, 4-wire, wye, floor mounted, of sizes shown on plans. An insulated grounded conductor shall be carried in conduits to nearest water pipe and building steel for grounding each transformer, neutral.

B. The dry-type transformer shall be class "H", insulation 150 degrees C. rise above an ambient of 40 degrees C.

C. The Electrical Contractor shall submit to the Architect, manufacturer's performance data sheets with each transformer in accordance with NEMA standard TP-1 latest revision and witnessed test report made in approved sound laboratory. Sound level of any transformer not to exceed 45 DB for transformers up to 100 KVA.

D. Transformers shall have a terminal board with solderless connectors for primary and secondary connections.

E. Transformers shall be connected 240-volt, delta to 120/208 volt wye and have two 2-1/2% above normal and two 2-1/2% below normal taps.

F. Dry type transformers shall be as manufactured by Eaton or equal as manufactured by General Electric or Square D.

G. Transformers shall operate without objectionable noise or vibration.

2.17 TRANSFORMERS (240/120/240 VOLT)

A. In areas where the existing electrical distribution system is 120/240 volt single phase three wire dry type transformers shall be as indicated on the plans. Dry type transformers shall be as indicated on the plans. Dry type transformers shall be two-wire 240 volt single phase to 120/240 volt single phase three-wire, floor mounted of sizes shown on the plans. An insulated ground conductor shall be carried in conduits to the nearest water pipe and building steel for grounding each transformer neutral.

B. The dry-type transformer shall be class "H", insulation 150 degrees C. rise above an ambient of 40 degrees C.

C. The Electrical Contractor shall submit to the Architect, manufacturer's performance data sheets with each transformer in accordance with NEMA standard TP-1 latest revision and witnessed test report made in approved sound laboratory. Sound level of any transformer not to exceed 45 DB for transformers up to 100 KVA.

D. Transformers shall have a terminal board with solderless connectors for primary and secondary connections.

E. Dry type transformers shall be as manufactured by Eaton or equal as manufactured by General Electric or Square D.

F. Transformers shall operate without objectionable noise or vibration.

G. Transformers shall be connected 240V to 120/240 volt and shall have two 2-1/2% above normal and two 2-1/2% below normal taps.

PART 3: EXECUTION

3.1 DRAWINGS

A. The drawings are generally diagrammatic and are intended to convey the scope of work and indicate general arrangements of equipment, ducts, conduits and fixtures. The locations of all items shown on the drawings or called for in the Specifications that are not definitely fixed by dimensions, are approximate only. The exact location necessary to secure the best conditions and results must be determined at the project and shall have the approval of the Engineer before being installed. The Contractor shall follow drawings in laying out work and checking drawings of other trades to verify spaces in laying out work to be installed.

B. Maintain maximum headroom and space conditions are all points. Where headroom or space conditions appear inadequate, Engineer shall be notified before proceeding with the installation. If directed by the Engineer, The Contractor shall, without extra charge, make reasonable modifications in the layout as needed to prevent conflict with work of other trades or for proper execution of the work. The Engineer shall be the sole judge of what a "reasonable modification" in the layout is.

3.2 WORKMANSHIP

A. The entire work provided in this Specification shall be constructed and finished in every respect in a workmanlike and substantial manner. It is not intended that the drawings shall show every pipe, fitting and appliance, but Contractor shall furnish and install all such parts as may be necessary to complete the systems in accordance with the best trade practice and satisfaction of the Engineer.

3.3 INSTALLATION OF WIRING AND CONDUIT

A. In general, all conduits shall be run concealed unless otherwise indicated to be run exposed.

B. Exposed conduits shall be run parallel to, or at right angles to, the walls of the building, and all bends shall be made with standard conduit ells or conduits bent to, not less than, the same radius. Horizontal runs of exposed conduits shall be close to ceiling beams, passing over water or other piping where possible and shall be supported by pipe straps or by other approved means, not more than 5' apart. Installation of exposed conduits in finished areas of the building shall be checked with the Engineer for layout before installation to conform to the pattern of the structural members, and when completed, is to present the most unobtrusive appearance possible. No exposed conduits will be permitted on walls or partitions in public areas.

C. In no place shall a conduit be run within 3" of hot water pipes, or appliances, except where crossing is unavoidable and, in that case, the conduit shall be kept at least 1" from covering or pipe crossed.

D. Conduits shall be supported on approved type if galvanized wall brackets, ceiling trapeze, strap hangers or pipe straps, secured by means of toggle bolts on hollow masonry units or expansion bolts in concrete or brick, matching screws on metal surfaces and wood screws on wood construction. No nails shall be used as a means of fastening boxes or conduits.

E. In general, no splices or joints will be permitted in either feeder or branches except at outlets or accessible junction boxes.

F. All splices in wire #8 AWG and smaller shall be standard pigtail, made mechanically tight, soldered and insulated with proper thickness of insulating tape. Wire splicing nuts as manufactured by Minnesota Mining Company (Scotch Lock) or Ideal wire nuts may be used, subject to the local wire inspector.

G. Wire #6 and larger shall be connected to panels and apparatus by means of approved lugs or connectors. Connectors shall be solderless type, sufficiently large to enclosure all strands of the conductors and securely fastened.

3.4 CUTTING, PATCHING AND DRILLING

A. It shall be the duty of the Contractor to provide all cutting, patching, and drilling necessary for the electrical installation.

3.5 GROUNDING

A. The Contractor shall furnish all fittings, clamps, conduits and wire of proper size to make ground connections between all apparatus and conduit and the water piping as required by the latest edition of the National Electrical Code and as indicated on the Drawings. Any ground wires shall be run in conduit of size required by the National Electrical Code.

3.6 QUIET OPERATION

A. All equipment and material furnished by The Contractor shall operate under all conditions of load without objectionable noises or vibrations, which, in the opinion of the Engineer, is objectionable. Where sound or vibration conditions arise which are considered objectionable by the Engineer, The Contractor shall eliminate same in a manner approved by the Engineer.

3.7 TESTS

A. Furnish all labor, material, instruments, supplies, and services and bear all costs for the accomplishment of tests herein specified. Correct all defects appearing under test, and repeat the tests until no defects are disclosed. Leave the equipment clean and ready for use.

3.8 FINAL INSPECTION AND TEST

A. Prior to test, feeders and branches shall be continuous from service contact point to each outlet; all panels, feeders and devices connected and fuses in place. Test system free from short circuits and grounds with insulation resistances not less than outlined in the National Electrical Code. Provide testing equipment necessary and conduct test in presence of the Owner's authorized representative.

3.9 GUARANTEE

A. All materials, items of equipment and workmanship furnished under this Section shall carry the standard warranty against all defects in materials and workmanship for a period of not less than one (1) year from the date of final acceptance of the work.

3.10 SLEEVES AND OPENINGS

A. Sleeves and openings for piping through walls, floors and other parts of the structure shall be provided at all points shown on the Contract Drawings and where indicated by the Engineer. The conduit shall go through the sleeve consisting of the next size conduit that will provide clearance. Sleeve ends shall be flush with surfaces.

3.11 WIRING METHODS

A. Rigid steel conduit shall be installed between a point 5'-0" outside the building foundation wall to the emergency generator.

B. Electrical metallic tubing may be utilized for feeders, branch circuit wiring in the basements and in public areas as indicated on the plans.

C. Fire alarm system wiring shall be installed in electrical metallic tubing in areas where fire alarm system wiring is to be installed exposed in basements, closets and stairwells.

D. All main feeders to panelboards shall be installed in electrical metallic tubing unless otherwise indicated on the Drawings. Branch circuit wiring in mechanical areas and wiring installed exposed in non-public areas shall be installed in electrical metallic tubing.

E. Emergency lighting system branch circuit wiring for lighting shall be installed in electrical metallic tubing.

F. Branch circuit wiring for lighting and power shall be installed in electrical metallic tubing where branch circuit wiring is installed expose, through existing conduit system or armored cable where branch circuit wiring is concealed.

G. PVC conduit shall be installed between the emergency generator to a point 5'-0" outside the foundation wall.

3.12 SUPERINTENDENCE OF WORK

A. The Contractor shall give his personnel superintendence to the work and shall retain at the job site during the period of construction, a competent foreman, satisfactory to the Engineer, who shall be in full charge of the work under this Section.

3.13 PROTECTION

A. The Contractor shall be responsible for his work and equipment until finally inspected, tested and accepted; careful storage of materials and equipment which are not immediately installed after delivery to site; and closure of open ends of work with temporary covers or plugs during construction to prevent entry of obstructing material.

3.14 SPECIAL COORDINATION INSTRUCTIONS:

A. Coordination with the work of other trades is referred to within various parts of this Section of the Specifications. The following special instructions shall also be carefully noted.

B. Locations of all wall outlets shall be verified with the Engineer prior to roughing-in conduits or cables. Refer to details and wall elevations on the drawings; mounting heights indicated on these drawings and/or specific dimensional information given to The Contractor by the Engineer shall take precedence over such information indicated on the electrical drawings.

C. If any discrepancy is found to exist between the electrical plans and any other drawings associated with the project, notify the Engineer at once and have location verified before work is installed. Any reasonable change in location of outlets and equipment prior to installation shall not involve additional expense to the Owner. The term "reasonable" shall be interpreted at moving outlets or equipment locations a maximum of ten (10) feet in any direction from the location indicated on the Drawings.

D. All feeder, branch circuit or auxiliary system wiring passing through pull boxes and/or being made up in panelboards shall be properly grouped, bound and tied together in a neat and orderly manner, in keeping with the highest standards of the trade, with plastic cable ties. Loose ends of the cable ties shall be properly trimmed after making up same. Cable ties shall be TY-Raps as manufactured by Thomas & Betts, or Holub Industries, Inc., Quick-Wrap, or Burndy Unirap, or equal.

E. Branch circuits and auxiliary system wiring shall be peeled out of the wiring gutters of the terminal cabinets and panels at 90 degrees to circuit breakers and terminal lugs for connecting to same.

F. Branch circuit wiring installed vertically through existing conduits and outlet boxes shall be color coded to reflect branch circuit origin and termination. See detail indicated on the drawings.

G. All duplex convenience and power receptacles shall be mounted vertically with the grounding post to the bottom as the outlet is viewed from the front.

H. At all points where steel support channels are cut and the unprotected steel is epoxed, two (2) coats of any approved rust preventative paint shall be applied to the bare surfaces, after proper cleaning. This requirement shall also apply to exposed job-cut threads of rigid steel conduit.

I. Color and type of rust preventative paint shall be as directed by the Engineer. In general, the paint for metals which are galvanized shall be aluminum paint and others will be of a zinc chromate type, or as otherwise approved.

J. All miscellaneous hardware and support accessories, including support rods, nuts, bolts, screws, and other such items, shall be of a galvanized or cadmium plated finish, or of other approved rust-inhibiting coatings. Care should be taken that fixtures shall not be installed on both sides of existing or new building expansion joints.

K. The Contractor shall provide all materials, equipment and workmanship to provide for adequate protection of all electrical equipment during the course of construction of the project. This shall also include protection from moisture and all foreign matter. The Contractor shall also be responsible for damage which he causes to be done to the work of other trades and shall remedy any such injury at his own expense.

L. The Contractor shall furnish and install approved insulation at terminal connection points for all electrical conducting materials, such as transformer terminals, terminal studs, and at any other special locations as directed by the Engineer. The determination of whether or not such special live parts shall be insulated shall rest exclusively with the Engineer.

M. Specific reference is made to Article 380-8 of the National Electrical Code, relating to accessibility and mounting heights of switches and circuit breakers used as switches. It shall be herein understood that this article shall also apply to the mounting heights of switches and/or circuit breakers in panelboards. Switches and/or circuit breakers in panelboards shall be located so that they may be operated from a readily accessible place and shall be so installed that the center of the grip of the operating handle of the switch or circuit breaker, when in its highest position, will not be more than 6-1/2 (six and one-half) feet above the finished floor or working platform. It shall also be herein understood that this requirement shall take precedence over any contradictory notes, dimensions or details which may be indicated on the Contract Drawings. All panelboards shall be mounted at a height to conform to this requirement.

3.15 SECONDARY ELECTRICAL SERVICE

A. The existing secondary service to the building is 120/240 volt three phase, three wire, and 120/240 volt single phase three wire originating at NSTAR pad mounted transformers.

3.16 COLOR CODING

A. Provide color coding for secondary service and feeders as follows:

PHASE	COLOR
A	Black
B	Red
C	Blue
Neutral	White
Equipment Ground	Green

B. Make connections to terminals from left to right arranged Phase A and C.

C. Spiral or longitudinal color stripe (tracer), running full length of cable.

D. Printed numbers stamped every 12 inches on cable insulation.

E. Numbered wire markers, Brady or equal, at junction boxes and termination points.

F. Provide same color coding for switch legs as corresponding phase conductor.

G. Provide colored plastic tape of specified color code identification for large size conductors available only in black. Wrap tape three complete turns around conductor, at ends and at connections and splices.

3.17 EXTENSION OF CIRCUITS

A. The Electrical Contractor shall be responsible for the disconnection of any existing conduits required by the removal of existing equipment to maintain continuity in the raceway system.

B. If any conduits or cable are to be retained, the Electrical Contractor shall make necessary alterations or relocations to conduit or cable to provide continuity to outlets disrupted by the alteration.

C. The General Contractor shall be responsible for all cutting and patching areas where raceways need to be modified.

3.18 SALVAGE AND DISPOSAL

A. The Contractor shall remove all electrical equipment, branch circuit wiring and outlet box which are not to be utilized for new equipment. The Contractor, should he elect to use existing raceway between outlets may blank outlet in order to maintain continuity in the electrical raceway system.

B. All electrical equipment removed and deemed salvageable by the Owner shall be stored in an area designated by the Owner.

C. Any electrical equipment removed that is not desired by the Owner shall be disposed of by the Contractor as his own expense.

D. The Contractor shall maintain the operation of the existing building fire alarm system, building security system, building telephone system, and the building electrical system until the new systems are installed.

END OF SPECIFICATION